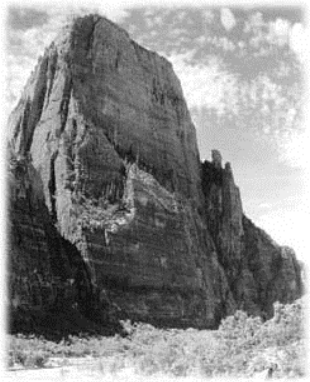
ENVIRONMENTAL ASSESSMENT AND ASSESSMENT OF EFFECTS FORM FOR PACIFICORP'S 34.5 /69 KV LINE RECONSTRUCTION PROJECT (ZION NATIONAL PARK TO SPRINGDALE) ZION EA-00-02

Prepared for:

PacifiCorp (dba Utah Power)
710 North Main Street
Richfield, Utah 84701

For Submission to the
National Park Service
Zion National Park
Springdale, Utah 84767



Prepared by:
JBR Environmental Consultants, Inc.
8160 South Highland Drive
Sandy, Utah 84093

April 2002

ENVIRONMENTAL ASSESSMENT
AND ASSESSMENT OF EFFECT FORM
FOR PACIFICORP'S 34.5 /69 KV POWER LINE
RECONSTRUCTION PROJECT
(ZION NATIONAL PARK TO SPRINGDALE)
ZION EA-00-02

NOTE TO REVIEWERS AND RESPONDENTS

If you wish to comment on the environmental assessment, you may mail comments to the name and address below. By law, our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold from the record a respondent's identity, as allowable by law. **If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment letter.** We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety. Reviewers should forward comments to:

Planning Specialist
Resource Management and Research Division
Zion National Park
Springdale, Utah 84767

ENVIRONMENTAL ASSESSMENT
AND ASSESSMENT OF EFFECT FORM FOR
PACIFICORP'S 34.5 /69 KV POWER LINE RECONSTRUCTION PROJECT
(ZION NATIONAL PARK TO SPRINGDALE)
ZION EA-00-02

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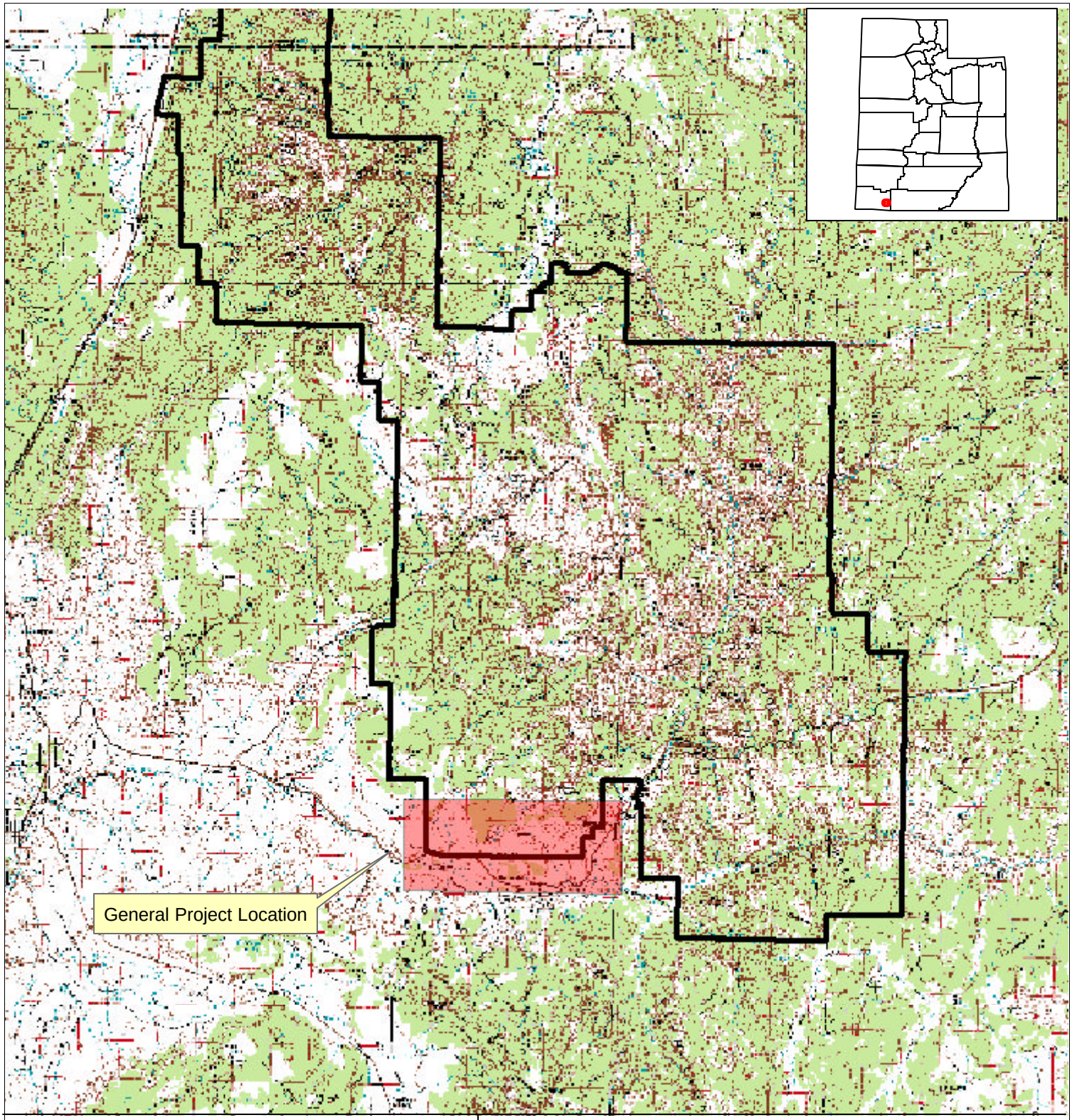
1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

Power lines currently providing electricity to the communities of Rockville, Springdale, and Zion National Park (ZNP) can no longer provide reliable service due to their age, poor condition, and lack of modern design features. In addition, current growth in demand will soon exceed power line (includes conductors and poles – conductors refer to the energized wire on the poles) capacity. PacifiCorp is proposing to replace 5.6 miles of the existing 34.5 kilovolt (kV) power line across ZNP lands with a new 69 kV power line. This Environmental Assessment (EA) evaluates the impacts of alternative ways of meeting this need.

In 1928, the Federal Power Commission (FPC) issued a license to Dixie Power Company to construct a 17-mile long 34.5 kilovolt (kV) power transmission line in the upper Virgin River Basin. This power line provided service to the communities of Toquerville, Virgin, Rockville, and Springdale, as well as facilities in ZNP. The FPC license was valid for 50 years, and over time, was transferred to Southern Utah Power, then California-Pacific Utilities Company (dba CP National Corporation). When the license expired in 1978, CP National requested that the Bureau of Land Management (BLM), as the appropriate federal land managing agency, renew the authorization for this power line, as a right-of-way (ROW) under Title V of the Federal Land Policy and Management Act (FLPMA). In response to the request, BLM issued a ROW (U-43523) for the existing power line which excluded ZNP lands. In 1982, the ROW was amended to assign the transmission power line to PacifiCorp (dba Utah Power). After an application to reconstruct and upgrade the existing power line was submitted to ZNP in 1998, a ROW permit for the existing power line was issued in November 2000.

Then and now, this power line is the only source of electricity for the Upper Virgin River Basin. Over the decades, the power line has been repaired and equipment replaced, as needed. In 1980, for example, new 35-foot poles were installed to replace 90 of the original, smaller poles. During the early 1990s, 6.7 miles of the power line (between Toquerville and Virgin) were upgraded to 69kV capacity. The upgraded power line required the installation of larger poles and double pole configurations to cross long spans between structures. In 2000, the BLM-Dixie Field Office (St. George) authorized the upgrading to 69 kV capacity of approximately five miles of the power line, located on public lands between Virgin and the western boundary of ZNP. An Environmental Assessment and assessment of effect form (EA) as required under the National Environmental Policy Act (NEPA) was prepared (UT-045-00-EA-02), and analyzed the project-related environmental impacts, resulting in the issuance of a Finding of No Significant Impact/Decision Record on February 10, 2000. Approximately half of that reconstruction work (2.7 miles) has been completed, to date. PacifiCorp is now proposing to upgrade the remaining 5.6 miles of the power line, on lands within ZNP and across State of Utah School Trust lands. Figure 1-1 displays the general location of the project.



Base: St. George and Kanab, UT
1:100,000 USGS

0 2.5 5 10 Miles

PacifiCorp's Zion National Park and Springdale 34.5 to 69kV Proposed Line Reconstruction Project

Figure 1-1. General Project Location

jbr environmental consultants, inc.
Salt Lake City Cedar City Boise Reno Elko

Created: 2 April 2002
Edited: Version 2
Printed: 10 April 2002

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1.2 Purpose of and Need for Action

Population growth and commercial development in the Upper Virgin River Basin have increased the demand for electrical power to the extent that this demand cannot reliably be met by the existing 34.5 kV power line. Over the years, the reliability (voltage availability to the customer) of the 34.5 kV power line has deteriorated. The reliability of the existing power line was internally rated by PacifiCorp and it was determined that the existing power line rated as one of the five worst (i.e., minimal clearance, poor conductor sag, lack of shield wire, age, etc.) power lines in the region (personnel communication with Paul Henry - PacifiCorp Project Manager, 2000). Without upgrading the power line, reliability will continue to deteriorate. The purpose and need for action is to provide reliable power service to the communities of Rockville and Springdale now and for foreseeable future development needs.

When the application for this project was submitted in 1998, the remaining life of the existing power line was predicted at 2 to 5 years. Life expectancy is based upon two criteria: 1) visual inspection of power line equipment, and 2) system reliability reports and growth projections of the communities that the power line services. An emergency replacement of 1.75 miles of the power line located east of Virgin occurred in the fall of 2001. The conductor (energized wire) has lost its mechanical strength and is extremely vulnerable to excessive sag. During storm events and windy conditions, the middle conductor stretches and sags below the other conductors allowing for the possibility of one or more conductors to touch together. This results in power outages. According to PacifiCorp, as a result of the previous faults in the existing power line and the outages that have occurred over the last two years, the conductor has been damaged to the point that it has no life expectancy left. Further, the existing conductor does not meet current National Electric Safety Code. The life expectancy of the new power line would be up to 50 years.

The existing power line has no shield wire and is therefore, more susceptible to damage from lightning strikes. Because of the age of the existing power line and the engineering design used for construction at that time, the power line is not adaptable for modifications to the current structures which would provide for adequate raptor protection. This increases the potential for raptors to be electrocuted. Since no other transmission power lines service this region, outages cannot be remedied by alternative or backup systems. In 1999 PacifiCorp recorded 10 power outages, three of which ranged from 25 minutes to approximately 5 hours of disrupted service. In 2000, there were three outages relating specifically to this power line, of which the longest was 52 minutes. In 2001, there were 12 outages pertaining to this power line, 11 of which ranged from 1 to 8 hours. Most recently in March of 2002, there was one extended outage that lasted for 3 hours.

The populations of Rockville, Springdale, and Virgin are increasing due in large measure to their proximity to Zion National Park. Springdale, in particular, supports a growing tourist-related commercial business sector. According to the State of Utah's Demographic and Economic Analysis (2000), the towns of Springdale, Virgin, and Rockville are projected to experience more than a 50% increase in population growth over the next 20 years (DEA website), although Rockville citizens have expressed the desire to encourage limited growth (Town of Rockville 1999). In addition, annual visitation to ZNP has increased from 1.25 million in 1982 to approximately 2.5 million creating the need for expanded visitor facilities in the Park, such as the new Zion Visitor Center and Transportation System (ZNP 1999) and commercial facility expansion in the local communities. These growth trends will likely continue into the future, placing additional demands on the existing power transmission system. PacifiCorp, through analysis of growth projections that model increase power demands, has estimated the load demand will likely exceed the existing power line's capacity by the year 2005. This will limit the potential for available power to area customers (personnel communication with Paul Henry - PacifiCorp Project Manager, 2002).
Outages and power surges caused by voltage interruptions (unreliability) affect existing local businesses dependant upon tourism economy, thus impacting related visitor services, and potentially resulting in a reduction in business

revenues. Repeated power surges can shorten the use life of many types of business equipment, including air conditioning/heating units, refrigerators, and computers. Lowered productivity and higher equipment costs can pose serious economic obstacles for small business owners, like those in the surrounding communities.

Public health and safety also depend on reliable power supplies. Power outages can be life-threatening for local residents with medical conditions that require oxygen or other electrically powered life support systems, as well as the need for air-conditioning units in the summer months. Public exterior safety lighting, security and fire detection systems may also depend on reliable power to operate.

1.3 Issue Identification

Coordination meetings between the City of Springdale, Town of Rockville, ZNP, BLM, and PacifiCorp regarding this proposed project were first initiated in 1998 and have occurred several times since that date. The most recent coordination meeting was held in October 10, 2000 at the Springdale Town Hall Meeting Room in Springdale, Utah. Input concerning this project was received from local government officials, as well as other state and federal agencies with administrative responsibilities. This input was included during the development of the Proposed Action and Alternatives.

On July 24, 2000, a Notice of Scoping (NOS) for the proposed project was sent to 870 interested individuals, agencies, and groups. Consultation letters were also sent to American Indian Tribal Chairpersons in the states of Arizona, Nevada, and Utah. The majority of the NOS letters were sent to box holders in Springdale, Rockville, and Virgin. The NOS was also published in the local area newspaper, advising readers of the proposed project and requesting public comment. During the 30-day scoping period (which allowed scoping comments to be accepted electronically via the Internet or in writing by mail), between August 1, 2000 - September 1, 2000, a total of 27 comment letters were received.

In conjunction with the NOS, a Public Informational Workshop was held in Springdale on August 23, 2000 to allow for an exchange of information and ideas regarding the proposed project and to solicit comments and concerns from the public. Approximately 20 individuals participated in the workshop. Prominent issues and similar concerns raised from the NOS and Public Informational Workshop are listed in Table 1-1.

Table 1-1. Issues and Concerns Identified During Scoping.

ISSUE	EA DOCUMENT SECTION(S)/COMMENTS
General	
Address the purpose and need for action.	Section 1.2 - Purpose and Need for Action
Buried power line alternative needs to be addressed.	Section 2.6 - Alternatives Considered but Eliminated
Costs of the underground alternative through the local communities.	Section 2.6 - Alternatives Considered but Eliminated
Visual Impacts	
Discuss the visual impacts of the proposed upgrade project.	Section 4.1.5.1 - Visual Resources
Wilderness	
Would the proposed project occur on lands designated as Wilderness?	Section 1.3 - Issue Identification, Wilderness Issue
Wildlife and Endangered Species Act Compliance	
Discuss the potential impact to federally protected species and wildlife resources within ZNP.	Section 4.1.3 and 4.1.4 - Special Status Species and Wildlife

Wilderness Issue

Questions concerning the relationship of the proposed Project Area to ZNP's Recommended and Potential Wilderness were raised by members of the public and the Southern Utah Wilderness Alliance (SUWA) during the scoping period. The following background information is provided to clarify that relationship and respond to those questions.

The draft ZNP General Management Plan (GMP), released in October 1999, incorrectly showed the southwest corner of the park, through which the existing power line ROW crosses, as a Potential Wilderness Area. That ROW and the adjacent lands (south to the park boundary) were not identified as either Recommended or Potential Wilderness in the 1978 Zion National Park Wilderness Recommendation to Congress (Appendix A). The power line ROW and adjacent lands were described in the 1978 Wilderness Recommendation as Non-Wilderness. ZNP does not propose to undertake the formal process required to modify its 1978 Wilderness Recommendation to Congress. The 1978 document constitute's the park's official Wilderness Recommendation. Therefore, the wilderness map in the final GMP (2001) depicts the southwest corner of the park, in which the power line ROW occurs, as Non-Wilderness, in conformance with the 1978 Wilderness Recommendation. Neither the Proposed Action nor other alternatives considered in this EA would occur within Recommended or Potential Wilderness.

Visual impacts to designated wilderness areas could occur and are addressed in Chapters 3 and 4 of this document.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Introductions and Background

Because the proposed power line upgrade occurs on public lands administered by ZNP, PacifiCorp would comply with all National Park Service (NPS) regulations under 16 U.S. Code 5. In addition, the NPS Organic Act states that the NPS will "conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (16 U.S. Code 1)." Other federal and state agencies that have jurisdiction over certain aspects of the Proposed Action (i.e. United States Fish and Wildlife Service (USFWS), Army Corps of Engineers (ACOE), and the Utah State Historic Preservation Officer (SHPO) would be consulted.

The NPS also has specific policies regarding utility ROWs within national park units. Director's Order No. 53, issued on April 4, 2000, states that ROW permits can only be issued for those uses or activities specifically authorized by Congress and only if there is no practicable alternative to such use of NPS lands. The Organic Act and Director's Order No. 53 have been considered during the preparation and analysis for this proposed project.

Proposed activities could potentially occur in Sections 33, 34, 35, and 36 of Township 41 South, Range 11 West; Sections 1, 2, 3, and 4 of Township 42 South, Range11 West; Sections 5 and 6 of Township 42 South, Range 10 West; and Sections 29, 31, and 32 of Township 41 South, Range 10 West. This section describes the Proposed Action, alternatives to the Proposed Action, including the No Action Alternative, and alternatives considered but eliminated from further consideration.

2.2 Proposed Action

2.2.1 Power Line Upgrade

Under the Proposed Action, the upgraded power line, approximately 5.5 miles, would be placed approximately 50 feet to the south of the existing power line with the exception of a portion of proposed power line (approximately one mile in length) that would be placed to the north of the existing power line near the western ZNP boundary (Figure 2-1). The proposed ROW width would be 100 feet at the location of each proposed pole structure and 50 feet in between. Single and double pole structures support the existing power line with triple pole structures occurring at re-directional locations along the power line. Currently, 70 structures, totaling 82 poles, ranging in height from 35-60 feet, support the power line within ZNP between the western park boundary and the Springdale substation. A total of four conductors, each 0.162 inches in diameter, occur on the existing structures.

The proposed upgrade would involve installing approximately 48 structures (86 poles), 50-80 feet in height (mostly 60 feet high), depending upon topographic features, which could support the weight of the three new, reflective, approximately 1-inch in diameter, conductors/power lines. The design of the new structures (Appendix D – TG201R) incorporates electrocution prevention for raptors with the appropriate spacing of the

ZION NATIONAL PARK BOUNDARY

Petrified Forest

Coalpits Wash

Mount Kinesava

Amphitheater Canyon

SPRINGDALE SUBSTATION

Springdale

Wash TRAIL (PACK)

FORK

NORTH FORK

EAST FORK

Bench

Rockville

HELIPAD

Gravel Pit

VIRGIN RIVER

Grafton

Cem

Well

ROCKVILLE SUBSTATION

Ford

BM 3747

BM 3814

T 41 S

T 42 S

R11W R10W

MT. CARMEL JUNCTION 26 MI.

(SPRINGDALE EAST)

LEGEND:

- EXISTING 34.5 kV POWER LINE
- PROPOSED ACTION
- BLM LANDS
- BLM AVOIDANCE AREAS
- STATE LANDS
- PRIVATE LANDS
- ZION NATIONAL PARK

MAP SUPPLIED BY PACIFICORP; MAY 11, 2000; FILE: ZIONS.DWG

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ZION NATIONAL PARK AND SPRINGDALE 34.5 TO 69 kV PROPOSED LINE RECONSTRUCTION PROJECT

FIGURE 2–1
EXISTING AND PROPOSED ACTION
POWER LINE ROUTES

jbr environmental consultants, inc.
Salt Lake City, Utah Cedar City, Utah Springville, Utah Reno, Nevada Elko, Nevada Boise, Idaho

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REVISION	DATE DRAWN
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	7/14/00
	11/17/00

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insulators. A seven-strand shield wire, approximately 1/2-inch diameter would also be attached and strung on top of each structure to prevent damage from lightning strikes. Similar to the existing power line, there would be a variety of single, double, and triple pole structures (see Appendix D). Specifically, 17 single poles would be needed along with 24 double and seven triple pole configurations located at re-directional sites along the power line. Guy wires would also be located at all angles and long span structures. A maximum 100 X 100 foot area would be needed for each structure placement.

For a maximum of 48 structures, total surface disturbance associated with the upgrade and installation of the new power line would be approximately 11.0 acres (48 structures X 10,000 ft^2 potential disturbance area per structure). This maximum surface disturbance area would allow adequate room for single, double, and triple pole structures, associated guy wires, equipment, and helicopter maneuverability. It is not anticipated that the entire 100 X 100 foot area would be disturbed for every structure. The depth of the holes for the proposed poles would range from 8 to 10 feet, leaving the pole height above ground level at approximately 43 feet for a 50-foot pole, 52 feet for a 60-foot pole, and up to 70 feet for an 80-foot pole. The holes for the poles would be dug by hand using hand tools, unless low-impact blasting is required.

If blasting is required, the blasting equipment (i.e. compressor and drill) would be flown in by helicopter and a qualified contractor would be used to conduct the blasting. At each proposed hole, five 1.5" holes would be drilled to the desired depth. Four levels of time delay charges would be set off to break up the hole location, sequentially from the top down. The blasted hole location would then be excavated by hand digging. Any use of explosives would be approved by the Park Superintendent on a case-by-case basis.

Following construction of the upgraded power line, permanent disturbance would consist of the actual location of the pole(s) and any associated guy wire attachment locations on the ground. It is estimated that a net permanent disturbance of 5 X 5 feet around each installed pole would remain to allow for maintenance activities in the future. Therefore, assuming there will be approximately 86 poles (single, double, and triple combined) with a net permanent disturbance of 25 ft^2/per pole, total permanent disturbance would total approximately 0.05 acres.

Because no road building would be authorized within ZNP, a helicopter would be used for all construction activities of the proposed upgraded power line. All poles, wire, tools, supplies, and equipment would be flown in to each pole placement area by helicopter. In some instances, equipment and supplies could be hand carried to the pole placement area. A main equipment storage and helicopter staging area would be located at the existing ZNP helipad area. No new disturbance is anticipated for this area. The location of the existing ZNP helipad and proposed equipment storage area is displayed on Figure 2-1.

Following the installation of the new transmission power line, the existing power line would be taken down. Removal of the existing power line would involve taking down the wire and subsequently cutting off the existing wooden poles at ground level. The existing wire would be removed from the insulators, cut into manageable pieces, coiled up, and flown out by helicopter. The cut poles would be flown out whole from ZNP via helicopter. A maximum disturbance area of 100 X 100 feet around each structure would be needed for pole removal. This entire area would not likely be disturbed during removal activities and mainly occurs within the existing ROW corridor in which the poles have been situated over the past 70 years. With 70 structures currently existing along the power line, total surface disturbance associated with the removal of the old power line would be approximately 16.0 acres (70 structures X 10,000 ft^2 potential disturbance area per structure). Any existing guy wires would also be pulled up and removed. A breakdown of the proposed disturbance acreage is provided in Table 2-1.

Table 2-1. Approximate Surface Disturbance Acreage for the Proposed Action.

Activity Type	PROPOSED ACTION	Net Permanent

	Maximum Temporary Surface Disturbance	Disturbance[1]
Installation of New Power line	48 structures X 10,000 ft^2 (100 X 100 foot area) = 11.0 acres	86 poles X 25 ft^2 (5 X 5 foot area) = 0.05 acres
Removal of Existing Power line	70 structures X 10,000 ft^2 (100 X 100 foot area) = 16.1 acres	- 0 - acres
Total Acreage Amount	**27.1 acres**	**0.05 acres**

[1] Net permanent disturbance is determined by assuming successful reclamation would occur following construction activities. This permanent acreage estimate takes into account the disturbance of each pole structure and potential future maintenance activities that might involve minimal surface disturbance.

Equipment

During construction activities, all poles, wires, and other equipment necessary to install the proposed upgraded 69 kV power line would be stored at the existing ZNP helipad. This helipad would also serve as the staging area for the helicopter to be used for construction and installation of the proposed upgraded 69 kV power line. Holes necessary for the upgraded power poles would be dug by hand using either hand augers transported to each pole location by helicopter or by manually digging the holes by using shovels, picks, or other hand excavating tools or by low-impact blasting procedures described above.

2.2.2 Schedule

Construction would be conducted in two phases, over a two-year period, unless required by ZNP within a one-year time frame. Between 20-40 days of helicopter time would be needed for each phase. Phase I would encompass the western Park boundary to the Rockville substation and Phase II would include the portion from the Rockville substation to the Springdale substation. Completion of the Proposed Action, weather permitting, would take approximately 8 to 12 weeks for each phase. Construction would begin in late fall or early winter. Construction would be timed specifically to avoid nesting peregrine falcons and the activity periods of desert tortoises. Most likely, construction activities would take place between November and March.

2.2.3 Maintenance

Although it is not anticipated that frequent failures to the upgraded power line would be common, some routine maintenance and service for occasional equipment failures would still be required. Types of maintenance activities that could occur over the life of the power line might include pole and/or power line replacement, insulator replacement, pole securing, and/or anchor support or guy wire replacement and installation. Access for routine maintenance and unexpected service failures would be limited to helicopter use and foot access. Terms and Conditions that would address maintenance activities, as outlined by ZNP, would be identified within the ROW permit if approved.

2.3 Project Alternatives

The formulation of alternatives was guided by issues raised during public scoping and based upon the purpose and need for the project, and the need to comply with agency regulations, directives, and policies. Alternatives were also developed to comply with the requirements of NEPA to analyze a reasonable range of alternatives. The

potential alternatives were evaluated by ZNP and PacifiCorp personnel to determine whether they addressed the issues raised during scoping, met the purpose and need for the project, and were technically and economically feasible. The alternatives analyzed in this EA include: No Action, Alternative A - constructing the new transmission power line mainly outside ZNP, and the Proposed Action.

Three other alternatives were closely examined and evaluated for feasibility. After an intense data gathering effort was conducted, it was determined that each of these alternatives were unfeasible and subsequently eliminated from further consideration or detailed study. A description of each of these alternatives is provided in Section 2.5.

2.3.1 Alternative A: Reroute of Power Line Mainly Outside of ZNP

2.3.1.1 Power Line Upgrade

This alternative route, as displayed in Figure 2-2, would be an overhead, upgraded 69 kV transmission power line located partially outside of ZNP approximately 7.8 miles in length. Portions of the power line located outside the boundary of ZNP (75%) would occur on BLM administered public domain lands, lands within Utah Department of Transportation (UDOT) ROW, State, and private lands. The remaining portion of power line (25%) would be located within ZNP, approximately 50 feet south and east of the existing 34.5 kV power line as described in the Proposed Action. The ROW outside of ZNP would be approximately 100 feet wide if feasible. Within ZNP the ROW would be 100 feet at the location of each proposed pole structure and 50 feet in between.

In order to get the upgraded power line to SR-9 under this alternative, the proposed route would cross portions of designated BLM avoidance areas as displayed in Figure 2-2. The St. George Field Office Record of Decision and Resource Management Plan (approved in March 1999, SGRMP) has identified this area as a utility ROW avoidance area. This designation was approved in order to protect the viewshed and scenic qualities of SR-9. In designated avoidance areas, BLM will grant new utility ROWs only when feasible alternative routes or designated corridors are not present (Decision Number LD-19). In the event that Alternative A were selected for implementation, BLM would conduct a plan conformance analysis and make a determination as to whether that segment of the proposed ROW could be authorized. Should BLM not authorize a ROW across the avoidance area, other options would need to be considered. The environmental impacts related to any changes in the proposed route of Alternative A route would be analyzed in a subsequent NEPA document. Under Alternative A, PacifiCorp would construct a majority of the power line using standard construction methods. On BLM and UDOT-administered lands, vehicles and equipment (including truck mounted augers) would be authorized to access the ROW along existing roads, including SR-9. However, given the nature of the soils, steepness of the terrain, and the viewshed sensitivity, the BLM would likely require the use of helicopters and other low impact forms of vehicular access for both construction and maintenance in areas not accessible by existing roads. Similarly, within the boundaries of ZNP, and at other locations where the terrain would be inaccessible to vehicles and equipment, helicopters would be used for construction. Low-impact blasting could be required at certain locations for hole excavation. Similar to the Proposed Action, a maximum 100 X 100 foot area would be needed for each

ZION NATIONAL PARK BOUNDARY

Petrified Forest

Mount Kinesava

Amphitheater Canyon

SPRINGDALE SUBSTATION

Springdale

(SPRINGDALE EAST)

Coalpits Wash

TRAIL (PACK)

Gravel Pit

HELIPAD

Rockville

Bench

VIRGIN RIVER

Grafton

Well

ROCKVILLE SUBSTATION

Cem

Rockville

BM 3747

EAST FORK

NORTH FORK

Ford

R11W R10W

T 41 S

T 42 S

LEGEND:

- EXISTING 34.5 kV POWER LINE
- ALTERNATIVE A ROUTE
- BLM LANDS
- BLM AVOIDANCE AREAS
- STATE LANDS
- PRIVATE LANDS
- ZION NATIONAL PARK

MAP SUPPLIED BY PACIFICORP; MAY 11, 2000; FILE: ZIONS.DWG

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FIGURE 2-2
EXISTING AND ALTERNATIVE A POWER LINE ROUTES

jbr environmental consultants, inc.
Salt Lake City, Utah Cedar City, Utah Springville, Utah Reno, Nevada Elko, Nevada Boise, Idaho

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structure. If a maximum of 82 structures is proposed, total surface disturbance associated with the upgrade and installation of the new power line would be approximately 18.8 acres (82 structures X 10,000 ft^2 potential disturbance area per structure). This maximum surface disturbance area would allow adequate room for single, double, and triple pole structures, associated guy wires, equipment, vehicle access, and helicopter maneuverability. It is not anticipated that the entire 100 X 100 foot area would be disturbed. Additional disturbance from this alternative would be generated in areas where vehicles would be used to construct the power line.

Table 2-2. Approximate Surface Disturbance Acreage for Alternative A.

Activity Type	ALTERNATIVE A Maximum Temporary Surface Disturbance	Net Permanent Disturbance[1]
Installation of New Power line	82 structures X 10,000 ft^2 (100 X 100 foot area) = 18.8 acres	149 poles X 25 ft^2 (5 X 5 foot area) = 0.09 acres
Removal of Existing Power line	70 structures X 10,000 ft^2 (100 X 100 foot area) = 16.1 acres	- 0 - acres
Total Acreage Amount	**34.9 acres**	**0.09 acres**

[1] Net permanent disturbance is determined by assuming successful reclamation would occur following construction activities. This permanent acreage estimate takes into account the disturbance of each pole structure and potential future maintenance activities that might involve minimal surface disturbance and the unreclaimed access road.

As with the Proposed Action, following construction of the upgraded power line, permanent disturbance would consist of the actual location of the pole(s) and any associated guy wire attachment locations on the ground. It is estimated that a net permanent disturbance of 5 X 5 feet around each installed pole would be sufficient to allow for maintenance activities in the future. Therefore, assuming there will be approximately 149 poles (single, double, and triple combined) with a net permanent disturbance of 25 ft^2 per pole, total permanent disturbance would be approximately 0.09 acres.

Under Alternative A, livestock allotment permittees would be notified prior to construction activities. In addition, upon passing through a closed gate, construction crews would again close the gate. Measures would also be taken to avoid harassing livestock as a result of Project activities.

Following the upgrade and installation of the new transmission power line, the existing power line would be taken down. Removal procedures as described for the Proposed Action would be followed. Disturbance totals would be the same.

Equipment

During construction activities, all poles, wires, and other equipment necessary to install the proposed upgraded 69 kV power line would be stored at the existing ZNP helipad. This helipad would also serve as the staging area for the helicopter to be used for construction and installation of the proposed upgraded power line within ZNP or areas inaccessible by vehicles outside of ZNP. In restricted or inaccessible areas, holes necessary for the

upgraded power poles would be dug by hand using either hand augers transported to each pole location by helicopter or by using shovels, picks, or other hand excavating tools. In areas where vehicles can access the proposed power line location, truck mounted augers would be used to excavate the pole holes. Low-impact blasting may be required in certain locations for hole excavation.

2.3.1.2 Schedule

Construction would be conducted in two phases as described in the Proposed Action. Phase I would encompass the power line approximately one-mile west of the western park boundary, south to SR-9, and east along SR-9 to the Rockville substation. Phase II would consist of beginning at the Rockville substation and ending at the Springdale substation. Construction timing and scheduling would be similar to that described for the Proposed Action. This alternative may take slightly longer than the Proposed Action because of the increased number of structures needed.

2.3.1.3 Maintenance

Although it is not anticipated that frequent failures to the upgraded power line would be common, some routine maintenance and service for occasional equipment failures would still be required. Types of maintenance activities that could occur over the life of the power line might include pole and/or power line replacement, insulator replacement, pole securing, and/or anchor support or guy wire replacement and installation. Access for routine maintenance and unexpected service failures would be limited to helicopter use and foot access within ZNP. Terms and Conditions that would address maintenance activities within the Park, as outlined by ZNP, would be identified within the ROW permit if approved. In areas where access for construction purposes was achieved by vehicles outside the Park, the same two-track access would be used for maintenance purposes.

2.3.2 No Action Alternative

Under the No Action Alternative, the existing 34.5 kV transmission power line would not be upgraded nor replaced with a 69 kV transmission power line. The reliability of the existing power line would continue to degrade and power outages would likely become more frequent. The existing power line would still not provide raptor protection or be protected from lightning strikes. Aging poles, wire, and insulators would continue to require maintenance, replacement, and repair. Routine examinations of the existing power line would continue. Any existing 35-foot poles that would require future replacement, would be replaced by slightly larger poles. Replacement activities might require power outages for brief periods. Although a detailed maintenance plan has not been developed for the existing power line, any future maintenance activities would be conducted as outlined in the Terms and Conditions of the 2000 ROW Permit (Zion 2000).

With the exception of future maintenance activities, under the No Action Alternative, there would be no new ground disturbance. Thus, previously undisturbed soils would remain unaltered and naturally occurring erosion would continue at the present rate. The current trend for the majority of existing vegetation communities would also continue and remain unaltered and animal species would continue to use the area as they do now. In addition, no sensitive plants that may occur with in the area would be subject to possible disturbance. Visual resources and noise levels would exist as they do now. Potential cultural resource sites would not be potentially disturbed. Under the No Action Alternative, if projected growth in the area continued as anticipated, communities would potentially need to regulate growth if existing capacity could not meet projected power demands; rolling blackouts would not be feasible. PacifiCorp is required to service the area by the Public Service Commission. Several large power customers in the area that are served by the existing power line maintain interruption service agreements that would make rolling blackouts unpractical along the existing single power line (personnel communication with

Paul Henry - PacifiCorp Project Manager, 2001).

2.3.3 Comparison of the Proposed Action and Alternatives, including Environmental Consequences

Differences exist between the Proposed Action and the Alternatives. The following summary table provides a comparison of these differences. Further, it provides a comparison of the Environmental Consequences for the Proposed Action and Alternatives.

Table 2-3. Power Line Route Alternatives Comparison Summary

	Proposed Action	Alternative A	No Action Alternative
Project Comparisons			
Approximate Length of Upgraded Power line	5.5 Miles	7.8 Miles	N/A (existing power line is 5.4 miles)
Temporary Construction Disturbance	27.1 Acres	34.9 Acres	As needed for maintenance.
Net Permanent Disturbance	86 poles - 0.05 acres	149 poles - 0.09 acres; 3.1 acres access road	82 poles - existing - 0.05 acres (maintenance activities)
Land Ownership	85% ZNP 10% State Land 5% Private	25% ZNP 14% State Land 14% Private 42% BLM (portions within UDOT ROW)	85% ZNP 10% State Land 5% Private
Pole Height	50 – 80 foot, mostly 60 feet	50 – 80 foot, mostly 60 feet	40 – 45 foot
Environmental Consequences Comparisons			
Soil and Geology	27.1 acres temporary surface disturbance, 0.05 acres permanent disturbance	34.9 acres temporary surface disturbance, 0.09 acres permanent disturbance	Surface disturbance as needed for future maintenance, 0.05 acres permanent existing disturbance.
Vegetation	27.1 acres of mostly trampling disturbance	34.9 acres of mostly trampling disturbance, 0.09 acres of vegetation removal	Vegetation disturbance would occur as needed for future maintenance.
Special Status Species	Potential displacement of bald eagles, other raptors, and Gila monsters could occur.	Potential displacement of bald eagles, other raptors, and Gila monsters could occur.	Potential displacement of bald eagles, other raptors, and Gila monsters could occur during future maintenance activities
Wildlife	Populations on whole would not be affected. Installation of raptor protection devices would decrease the risk for potential injury or death. Permanent loss of 0.05 acres of habitat.	Populations on whole would not be affected. Installation of raptor protection devices would decrease the risk for potential injury or death. Permanent loss of 3.14 acres of habitat.	During future maintenance activities, some habitat disturbance and displacement could occur.
Visual Resources	Upgraded poles would typically be 15 –	Upgraded poles would typically be 15 – 20	Visual resources would exist as they do

	Proposed Action	Alternative A	No Action Alternative
	20 feet taller and would generally be more prominent than the existing structures. More multi-pole structures would be installed and would be more visually apparent on the landscape than single pole structures. 4.7 miles of new power line would be installed in ZNP. Upgraded poles would not be visible from Grafton. Existing poles visible from Grafton would be removed Portions of the new power line would continue to be visible from the Coalpits Wash and Chinle Trails.	feet taller and would generally be more prominent than the existing structures. More multi-pole structures would be installed and would be more visually apparent on the landscape than single pole structures. 2.0 miles of new power line would be installed in ZNP. Upgraded poles would not be visible from Grafton. Existing poles visible from Grafton would be removed The new power line would not be visible from the majority of the Coalpits Wash and Chinle Trails. Portions of the new power line would be installed in areas currently lacking power lines.	now. In certain areas the existing power line would remain visible to visitors of ZNP, along SR-9, and Grafton. No power lines would be installed on lands currently lacking power lines.
Soundscapes	During construction activities, the existing noise levels would increase temporarily. The increase would be due primarily to the use of a helicopter.	During construction activities, the existing noise levels would increase temporarily. Noise related to the use of a helicopter would be less than under the Proposed Action.	Noise levels would continue at current levels.
Cultural Resources	Adverse impact could occur to presently unknown subsurface archeological resources during pole placement. Potential adverse visual impacts to view sheds and ground disturbance may occur by pole replacement activities to presently unknown ethnographic resources. Impacts to the two eligible sites along the route would be avoided through implementing Environmental Protection Measures outlined in Section 2.4.1.	Adverse impacts could occur to presently unknown subsurface archeological resources during pole placement. Depending upon the specific location of the poles, up to 3 eligible cultural resource sites could be adversely affected. Potential adverse visual impacts to view sheds and ground disturbance may occur by pole replacement activities to presently unknown ethnographic resources.	No impacts would occur to any cultural resources from future maintenance activities along the existing power line.
Recreation	Recreational activities could be temporarily limited during construction	The majority of recreational activities within ZNP would be unaffected. Temporary use	Recreationists would generally continue to use the area as they do now. Some

	Proposed Action	Alternative A	No Action Alternative
	activities. Temporary use restrictions on the Coalpits and Chinle Trails could occur. Future disturbance for maintenance would be rare and much less frequent than for the No Action Alternative.	restrictions on the Coalpits and Chinle Trails would not occur. Future disturbance for maintenance would be rare and much less frequent than for the No Action Alternative.	future maintenance activities could temporarily impact recreational activities. The frequency of disturbance for maintenance would be low, but much more than for other alternatives.
Wilderness	No construction activities would occur on lands recommended as wilderness or potential wilderness. However, from within certain locations in recommended wilderness in ZNP, construction related activities could be heard and potentially the upgraded power line could be visible.	No construction activities would occur on lands recommended as wilderness or potential wilderness. However, from within certain locations in recommended wilderness in ZNP, construction related activities could be heard and potentially the upgraded power line could be visible.	Under the No Action Alternative, the existing power line would remain visible from some lands recommended as wilderness or potential wilderness. No construction activities would occur though some maintenance activities would be audible and visible.
Air Quality	The release of short-term emissions related to the use of construction equipment would occur. The use of a helicopter would also contribute to the emissions from generating dust. Fugitive dust from actual construction activities would also periodically increase airborne particulates within the immediate Project Area. However, because surface disturbance would be small, particle concentrations would be minor. There would be no impact to the overall air quality of the Project Area, ZNP, or Washington County.	Impacts to air quality would be the same as for the Proposed Action with the exception of additional ground disturbance and the decreased use of the helicopter. Under this alternative, approximately 11 acres of new disturbance would occur, increasing the temporary release of airborne particulates within the Project Area. The 3.1 acres of unreclaimed access roads could slightly contribute to dust emissions during wind events. There would be a negligible impact on the overall air quality of the Project Area, ZNP, or Washington County.	The trend for air quality would continue from existing emission and fugitive dust caused from motorized vehicles and other sources in the area.
Water Resources	No impact to water resources would occur.	No impact to water resources would occur.	No impact to water resources would occur.
Socioeconomics	The upgraded power line would provide the necessary power supply to	The upgraded power line would provide the necessary power supply to accommodate	Outages and power surges caused by voltage interruptions that currently affect

	Proposed Action	Alternative A	No Action Alternative
	accommodate the annual increase in tourism, the projected population growth, and normal operation and future expansion of local businesses in the area. Outages and power surges caused by voltage interruptions that currently affect existing local businesses would be minimized.	the annual increase in tourism, the projected population growth, and normal operation and future expansion of local businesses in the area. Outages and power surges caused by voltage interruptions that currently affect existing local businesses would be minimized.	existing local businesses by lowering production, impacting customer services, and potentially reducing business revenues would continue at the existing trend.
Livestock Grazing	No impact to livestock grazing resources would occur.	Livestock grazing activities may be temporarily impacted if construction activities occurred during the two months that cattle were allowed to graze in the BLM allotment.	No impact to livestock grazing resources would occur.

2.4 Environmental Protection Measures Applicable to the Proposed Action or Alternatives

Implementation of the Proposed Action or Alternatives would comply with all applicable federal and state laws, as well as local ordinances during all phases of the project. PacifiCorp would also comply with the Terms and Conditions attached to the ROW permit issued by NPS. These provide for additional levels of environmental protection designed to prevent damage to natural and cultural resources.

The following project design features and construction protocols would be in effect during implementation of the Proposed Action or Alternative A.

2.4.1 Design Features and Construction Protocols Designed to Lessen Environmental Impacts

Restoration/Rehabilitation of Disturbed Areas

Topsoil from the pole and guy wire (if necessary) hole excavations would be stockpiled within the 100' X 100' allowable disturbance area and conserved for revegetation efforts after construction. Upon completion of construction activities, the disturbed areas would be cleaned, restored, and revegetated using local gene pool native plants. Steps would be taken to re-contour (using hand tools), minimize erosion and compaction, restore natural ground cover, reestablish plant growth, and allow natural surface drainage. Rehabilitation measures planned for the disturbed areas include replacement of topsoil and revegetation via broadcast seeding. Revegetation of disturbed areas would be done by a private contractor under the supervision of the Park botanist. Specifications for native seed mixtures would be provided to the contractor by the Park. Under Alternative A, access roads would be located and constructed to minimize visual impacts and erosion from road surfaces.

Control of Noxious Weeds

To minimize the potential for the spread of noxious weeds, all equipment that would be used during construction activities by PacifiCorp would be washed prior to being used on ZNP lands. ZNP staff would inspect all washed equipment prior to use on ZNP land. A certified weed-free seed mix would also be used during reclamation activities.

Cultural Resources

The inventory methods used to identify historic properties within the Area of Potential Effect (APE) for the proposed project satisfy the Secretary of the Interior's Standards and Guidelines. Should any of the following be discovered within the APE during project-related activities, such activities would immediately cease: 1) previously unidentified surface or subsurface cultural resources; and/or 2) human remains and/or objects or materials subject to the Native American Graves Repatriations and Protection Act (NAGPRA), as amended. The BLM or ZNP archeologist, as applicable, Authorized Officer will immediately be contacted and a qualified archeologist will conduct an evaluation of the newly-discovered resources. No project-related activities that have the potential to effect historic properties or human remains and/or objects and materials subject to NAGPRA will be authorized to proceed until: 1) appropriate level Section 106 consultations with the Utah SHPO and consultations with American Indian Tribes claiming affiliations have been conducted; and 2) appropriate level treatments and/or protocols have been implemented.

The use of an archeological monitor during removal of the existing power line and construction of the new power line would be determined at the discretion of the Park Archaeologist.

Project Scheduling

1) Commitment to lessen/avoid effects to Special Status Species

   · Construction activities would not occur within a ½-mile buffer area of any known active raptor nests until after the nesting period for that species was complete.

   · Construction activities would take place outside of the known nesting period of the peregrine falcon (February - August) if within one-mile of an active nest. The closest known peregrine falcon nest is located approximately ¾ mile from the Project Area.

   · Construction activities would take place in late fall/early winter, outside the activity period of the desert tortoise, in the northeast part of the project area (approximately 82 acres) where a small population (estimated at 20 individuals) of tortoises is known to occur. Park and/or Utah Division of Wildlife Resources (UDWR) biologists would assist in pole sitting/installation to protect tortoise burrow sites. If impacts to occupied burrows could not be avoided, the burrow(s) would be excavated by a qualified desert tortoise biologist and the tortoise(s) moved to an approved site (pre-selected burrow or UDWR's holding facility).

   · Contracted biologists/botanists, meeting professional qualifications and under the supervision of the Park botanist would conduct pre-construction surveys at new proposed pole hole locations and immediately surrounding existing poles for Special Status Species (plants and animals) just prior to the start of scheduled construction activities.

   · Within potential habitat, the Project Area would be surveyed for the presence of Shivwits milk-vetch and desert tortoise burrows. Identified locations would be marked (e.g., flagged or fenced) for avoidance. Proposed pole locations would be moved, if necessary, in order to avoid populations of Shivwits milkvetch or a tortoise burrow(s). If a pole could not be moved to avoid impacting either of these species, ZNP would be immediately contacted and an alternative discussed.

2) Commitment to avoid scheduling construction involving helicopter use during peak wildfire season, to lessen potential air safety conflicts.

3) Commitment to avoid or limit the number of helicopter overflights during construction activities over recommended wilderness lands.

4) Commitment to limit the number of helicopter overflights during construction activities over trails (e.g., Chinle, Coalpits) or other heavily used areas within ZNP or construct during off-peak season.

Project Design Features

- Commitment to design a line that would protect raptors from electrocution.
- Commitment to use self-weathering poles (e.g. wooden poles).
- Commitment to install aviation warning devices (orange balls) at locations where the combination of topography and visibility constraints might pose a hazard to ZNP emergency and operational aviation use in the area, as determined by the Park superintendent. Based on PacifiCorp's standard, which complies

with FAA and Utah State requirements, five 36-inch balls (orange, white, yellow, orange, orange – from east to west) would be used on the 1,122-foot span, and would be spaced approximately 187 feet apart on the shield wire.

2.5 Alternatives Considered But Eliminated From Further Consideration

As directed by 40 CFR 1500.2e which states that the NEPA process must "identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment," and also as directed under 40 CFR 1501.2c which states that agencies need to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved resource conflicts concerning alterative uses of available resources..." following a project meeting, held on October 10, 2000, three additional alternatives were discussed for consideration by meeting participants. Because each alternative had predictable similar adverse impacts to the natural and cultural environment, based on construction implementation, as well as negative impacts to private property, they were dropped from consideration and further NEPA analysis and were deemed not to be reasonable.

As stated above under 40 CFR 1500.2e, "reasonable alternatives" must be identified and assessed. According to NEPA, a "reasonable alternative" is defined as follows:

- Generally meets the proposed action (purpose or need)
- Would not require significant changes in government policy or legislation (Case Law Natural Resources Defense Council v. Callaway 524 F.2d 79 2cd Circuit, 1975)
- Would avoid or minimize adverse effect of the actions upon the quality of the human environment
- Would be subject to the "rule of reason," with the alternative being in proportion to the significance of the environmental impacts related to the proposed action.

The geographic locations of the three alternatives considered but eliminated from further consideration are displayed in Figure 2-3. A brief description of each considered alternative is given below, as well as the reason(s) for eliminating it from further consideration.

2.5.1 Reroute of Power Line Bordering ZNP Boundary

The reroute of the power line outside of ZNP, bordering the Park boundary was considered. However, the proposed alternate route swings to the north around the southeast corner of the Park, and private land dominates this alternate route area all the way to the Springdale substation. Constructing the overhead power line through the private land would require a large amount of private land being condemned for the ROW. In addition, the upgraded power line would be highly visible from many of the private residences in the area. In some cases, the power line would actually cross less than 100 feet from existing homes.

ZION NATIONAL PARK BOUNDARY

Mount Kinesava

Amphitheater Canyon

SPRINGDALE SUBSTATION

Springdale

Petrified Forest

Coalpits Wash

Wash TRAIL (PACK)

FORK

NORTH FORK

EAST FORK

Huber

Rockville Bench

HELIPAD

Gravel Pit

VIRGIN RIVER

Grafton

Cem

Well

ROCKVILLE SUBSTATION

Rockville

BM 3747

Ford

TRAIL

T 41 S

T 42 S

R11W R10W

LEGEND:

- EXISTING 34.5 kV POWER LINE
- REROUTE OF POWER LINE BORDERING ZION NATIONAL PARK BOUNDARY
- REROUTE OF POWER LINE ALONG SR9
- REROUTE OF POWER LINE ALONG SR9 – UNDERGROUND

- BLM LANDS
- BLM AVOIDANCE AREAS
- STATE LANDS
- PRIVATE LANDS
- ZION NATIONAL PARK

2000 0 2000 FEET

N

MAP SUPPLIED BY PACIFICORP; MAY 11, 2000; FILE: ZIONS.DWG

ZIONS\ZIONS.DWG

PACIFICORP'S

ZION NATIONAL PARK AND SPRINGDALE 34.5 TO 69 kV PROPOSED LINE RECONSTRUCTION PROJECT

FIGURE 2–3
ALTERNATE ROUTES CONSIDERED BUT ELIMINATED FROM ANALYSIS

jbr environmental consultants, inc.
Salt Lake City, Utah · Cedar City, Utah · Springville, Utah · Reno, Nevada · Elko, Nevada · Boise, Idaho

DESIGN BY	DRAWN BY	CH'D BY	SCALE
GB	CP		1"=2000'

REVISION	DATE DRAWN
	7/14/00
	11/22/00
	12/20/00
	2/10/01

This alternative was deemed unreasonable based upon the fact that it would tend to create more of a visual impact to private landowners and not actually avoid or minimize the potential adverse effects upon the quality of the human environment. In addition, the alternative would create the need for a large condemnation of privately owned lands.

2.5.2 Reroute of Power Line Along SR-9

The reroute of the upgraded power line outside of ZNP, following SR-9 was considered. This proposed overhead alternate route, approximately two miles longer than the Proposed Action and Alternative A, would require the upgraded power line to go through the towns of Rockville and Springdale. This alternative would result in the power line being less visible from within ZNP, but would increase the visual intrusion along the highway and through the local communities. The visual impact along SR-9 would not only occur from the actual power line itself, but a large swath of trees (20-foot corridor) would need to be removed or extensively trimmed to allow for the installation and safety of the proposed upgraded power line. The power line would pass through some yards of residential homes that are located within the communities and require disturbance to established lawns, trees, and/or flowerbeds.

Potential adverse impacts to historic irrigation ditches running on the north and south side of SR-9 through Rockville, through placement of pole structures and use of heavy equipment during construction could occur. Other presently unidentified subsurface culturally important sites along SR-9 would be disturbed and mitigation measures, such as data recovery, would be required. Depending on the significance of the site, this could potentially result in long delays of project construction. Further, installation of the overhead power line along SR-9 would not eliminate the need for overhead distribution power lines that currently exist. Overhead distribution power lines would remain in the local communities and be necessary to provide power to individual residences and or businesses. Distribution power lines would continue to receive electric power provided to the area by the lone transmission power line for the area. Transmission power lines differ from distribution power lines in that the transmission power lines are the main source of power service into an area. Transmission power lines are typically much larger in size than distribution power lines and require additional safety design features and clearances because of the associated higher voltage carried through the
power line. Springdale has adopted standards for the community that will require all future distribution power lines to be placed underground in order to avoid impacts to the scenic qualities of the area. An overhead transmission power line through Springdale would not conform to the standards of the community, avoid or minimize impacts, and therefore does not constitute a reasonable alternative.

2.5.3 Reroute of Power Line Along SR-9 - Underground

The reroute of the upgraded power line outside of ZNP, following SR-9, and being installed underground was also an alternative considered. This underground alternative would require a large disturbance footprint to be located within UDOT's ROW, thus UDOT was consulted and notified of the potential alternative.

As result of the notification, UDOT issued an official response dated November 21, 2000, and indicated opposition to the proposed underground transmission power line being placed within the ROW (Appendix B). However, UDOT did concede that if the proposed underground power line had to be placed within the ROW, then the power line would be required "to be located as close to the edge of the ROW boundary as practicable as is spelled out in the 'Manual for the Accommodation of Utilities and the Control and Protection of State Highway Rights of Way' and not under any portion of the pavement." This stance by UDOT resulted in the investigation of the feasibility of placing the power line within the ROW, but outside the area covered with pavement for SR-9. Therefore, an

analysis of this alternative was conducted to determine the appropriateness and feasibility and is summarized in the following paragraphs.

The proposed underground power line would require a minimum easement width of 20-30 feet along SR-9. Within Rockville along SR-9, the underground transmission power line would need to be constructed under the sidewalk or on private property, which would likely result in some tree removal or disturbance to existing residential yards. During installation of the power line, one-lane road closures would occur for the length of the construction, approximately two-five months. The upgraded transmission line would be installed either within a duct bank that would require a trench 2 feet wide X 6 feet deep and consist of conduits encased in concrete or the line would be directly buried which would result in a trench 3 feet wide, with a 4 inch thick concrete cap, buried no less than 4 feet deep. Vaults required for splicing/termination would be needed approximately every 2000 feet (up to 2700 or 2800 feet maximum depending on cable reel lengths, terrain, crosslinking of cable sheaths, and other physical constraints to cable placement). Each vault would be 8 X 8 X 16 feet, and would be installed in line within the trench and consist of two manholes per vault location. The power line would also need a minimum separation of approximately five feet from any other underground power lines (i.e. water, sewer, etc.). According to the Public Service Commission of Utah (Electric Service Regulation No. 12, Part 4b), PacifiCorp, when required by a governmental entity and when such conversion is practical, would replace existing overhead facilities with underground facilities provided the entity pays the estimated costs of the new facilities. In essence, the local communities would be responsible for financing the construction activities associated with the underground installation.

Based upon diagrams generated from a recently completed water line installation project within Rockville (Jones and DeMille Engineering - Culinary Water Improvements 1999), existing water lines occur on both sides of SR-9, either near the outer edge of the pavement, under the sidewalk, or both. In addition, a sewer line is also located within the SR-9 ROW and occurs on the north side of the road at the eastern end of town and eventually crosses over to the south side of the road. Essentially, with PacifiCorp's standards for minimum separation required from other utilities and UDOT policies not to install the upgraded power line under the existing roadway pavement, the upgraded power line could not be accommodated within the UDOT ROW.

Finally, repair and maintenance of an underground power line was also evaluated. Due to the specialized nature of the underground power line, if an outage did occur, repair of the line might result in long outages that could impact public health (i.e. electrically operated medical equipment), safety, and economics. According to PacifiCorp, a repair and maintenance crew would need to be flown in from the Midwest in order to locate and repair the outage problem. Currently, PacifiCorp does not retain in-house maintenance technicians that are trained to repair underground transmission lines. PacifiCorp has acquired materials and equipment to work on these type of underground lines, however, this type of work is still a limited specialty and PacifiCorp would continue to rely on outside contractors to make any necessary repairs to this underground line. Therefore, outages could range from 3-14 days because of this situation.

After considering the safety issues, presence of existing utilities, UDOT's policy, impacts to private property, and potential long-term outages, it was decided that this alternative was deemed unfeasible and was ultimately eliminated from further consideration and further analysis.

2.6 Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the NEPA, which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that "the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101:

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
- enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Generally this means the alternative that causes the least damage to the biological and physical environment. It also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources." (CEQ, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" (40 CFR 1500-1508), *Federal Register* Vol. 46, No. 55, 18026-18038, March 23, 1981: Question 6a.).

After a review of the proposed project and applying the six criteria listed above, the Proposed Action has been determined as the environmentally preferred alternative. The Proposed Action would comply with the CEQ direction and would not jeopardize important natural resources or result in degradation to the environment. Further, it would assure all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings by not risking health or safety of others and would achieve a balance between population and resource use.

3.0 AFFECTED ENVIRONMENT

This chapter describes the existing conditions of the physical, biological, cultural, and socioeconomic resources of the proposed Project Area. The resources that are addressed in this chapter were identified during the scoping process and/or by the ZNP staff as having the potential to be affected by project-related activities. Due to the proximity of the Proposed Action and Alternative A (as displayed on Figures 2-1 and 2-2), the affected environment for each action is similar. Thus, for this section, the term Project Area refers to the total combined area associated with both actions. In some cases, distinct differences exist for the affected environment between the two actions and are thus discussed separately, if applicable.

The following natural resources are not present or are not affected by the Proposed Action or alternatives in this EA and are therefore not addressed further:

- **Areas of Critical Environmental Concern/Research Natural Areas**
- **Farmlands** (prime or unique)
- **Floodplains**
- **Wild and Scenic Rivers** - No river classified as "Wild and Scenic" occurs within the Project Area.
- **Environmental Justice**
- **Wastes (solid and hazardous)** - No hazardous materials would be produced or stored on or within the ROW.

3.1 Soils and Geology

Thirteen soil-mapping units occur within the Project Area. Presented below is a brief description of the most common soil units within the Project Area. Complete descriptions of all soil units found in the Project Area are available in the Soil Survey of Washington County (SCS 1977).

Badland (BA) - This series consists of nearly barren, multicolored beds of actively eroding shale, shale interbedded with sandstone, and shale interbedded with layers of gypsum. The landscape is rolling and severely dissected, and channels of intermittent streams form a branching pattern. The sediment potential is high during intense thunderstorms in summer.

Bond sandy loam (BOD) - These soils belong to the bond series and consist of shallow, well-drained soils on high mesa tops. These soils formed in residuum weathered from conglomerate and sandstone. The surface layer is reddish-brown sandy loam. Slopes range from 1 to 10 percent. Runoff is medium and the hazard of erosion is medium.

Mathis-Rock outcrop (MGB) - This complex belongs to the Mathis series and occurs on severely eroded, dissected mountainside slopes and mesa remnants. These soils formed in material derived mainly from sandstone and are about 50 percent Mathis very stony loamy fine sand, 20 percent Rock outcrop, and 30 percent other soils. Slopes are uneven and range from 20 to 50 percent. The surface layer is reddish-brown very stony loamy fine sand and gravelly loamy fine sand. Runoff is rapid and the hazards of sheet erosion and gullying are severe.

In terms of surface geology, the Project Area would cross through alluvium, alluvium remnants, the Chinle formation, the Moenkopi formation, slide deposits, and volcanic rock (Hamilton 1987).

3.2 Vegetation

The vegetative community of ZNP and nearby areas is diverse. This diversity is a function of its placement within or near three major ecoregions: the Colorado Plateau, the Mojave Desert, and the Great Basin. In general, plant communities in ZNP range from a low elevation (about 3800 feet at Coalpits Wash) warm desert shrub up to high elevation (8930 feet at Horse Ranch Mountain) forest (Welsh 1989). The Project Area is located between 3700 and 4400 feet and thus lies within the desert shrub community and portions of a juniper forest community. The Utah Gap Analysis Project (UT-GAP 1995) mapped two land cover types that are common within the Project Area:

> Juniper - This community is described as being a coniferous forest principally dominated by juniper (*Juniperus* spp.). Associated tree species include pinyon pine (*Pinus edulis* or *P. monophylla*) and mountain mahogany (*Cercocarpus ledifolius*). Primary shrub species include sagebrush (*Artemisia* spp.) and blackbrush (*Coleogyne ramosissima*). This community is most common on the highest elevations of the Project Area on the benches and ridgetops.
>
> Blackbrush -This community is described as being principally dominated by blackbrush. Associated shrub species include spiny hopsage (*Grayia spinosa*), Mormon tea (*Ephedra* spp.), and shadscale (*Atriplex confertifolia*). This community is the most dominant throughout the Project Area.

Besides the juniper and blackbrush communities, a sagebrush dominated area also occurs on the plateau to the west of Coalpits Wash. Portions of Alternative A that occur within the UDOT ROW consist of annual grasses and forbs that are routinely cut for ROW maintenance purposes.

3.3 Special Status Species (Threatened, Endangered, Proposed, Candidate, and Sensitive)

The US Fish and Wildlife Service (USFWS) identified ten federally listed species that are known to occur in Washington County, Utah. Only 3 out of the 10 species have the potential to occur in or adjacent to the Project Area. A Biological Assessment (BA) was prepared for this project and is under separate cover. BAs are conducted for major federal construction projects and some projects that require a permit from a federal agency. BAs discuss the potential impacts of a Proposed Action and alternatives on species listed as threatened or endangered, species proposed for listing, candidate species, and their habitats.

The listed animal species known to occur in Washington County include: bald eagle (*Haliaeetus leucocephalus*), desert tortoise (*Gopherus agassizii*), Mexican spotted owl *(Strix occidentalis lucida*), Southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (C*occyzus americanus*), Virgin River chub (*Gila seminuda*), and woundfin (*Plagopterus argentissimus*). Listed plant species are the dwarf-bear poppy (*Arctomecon humilis*), Siler pincushion cactus (*Pediocactus sileri*), and the recently listed Shivwits milk-vetch (*Astragalus ampullarioides*, previously *A. eremiticus ampullarioides*). Of these ten species, only the bald eagle, desert tortoise, and the Shivwits milk-vetch are expected to occur within the Project Area. The following accounts of federally protected species that have the potential to occur within the Project Area are reiterations of information contained in the BA.

Bald Eagle (Threatened) - Bald eagles are not expected to occur in the area except as occasional visitors. The most common use of the area by bald eagles would occur in winter as migrant eagles would use the area for hunting and feeding opportunities. Bald eagles do not nest in the area. In fact, there are only four known nesting pairs in Utah, none of these in Washington County (USUES 1998). Marginal roosting and foraging habitat is available within the vicinity of the Project Area; however, it is unlikely that this species would be found there on a regular basis and no roost sites are known within ZNP (Zion 1997).

Desert Tortoise (Threatened) - Within ZNP, tortoises are known to exist at only one location, an area west of

Springdale. This population may have resulted from animals transplanted to this location sometime in the past. It is undetermined if this suspected transplant supplemented a natural population. This small population occurs at one of the highest elevations documented for desert tortoises. Burrowing depth and other behaviors of this tortoise population to adapt to higher elevation winter conditions is of scientific and species conservation interest beyond ZNP. Tortoise surveys were conducted (UDWR 2000) in June and September 2000 in this area. A total of seven live tortoises and 36 tortoise burrows were found within the area surveyed. The majority of active tortoise sign discovered during the surveys occurred within one-mile of the town of Springdale.

Shivwits Milk-Vetch (Endangered) - The Shivwits milk-vetch grows on the Chinle geological formation in Washington County, Utah. Prior to the year 2000, the species was known to exist at only five sites with a total population size of approximately 1,000 individual plants (R. Van Buren, personal communication 1998, cited in England 2000). In May 2000, JBR Environmental Consultants, Inc. (JBR) biologists discovered over 50 individuals during field surveys within the Project Area. Notes of these findings were provided to the ZNP botanist. The majority of these individuals were found on the Chinle formation that occurs at the extreme eastern edge of the Project Area near the town of Springdale.

In addition to the federally listed species, numerous sensitive plant and animal species also have the potential to occur within the Project Area. Twenty sensitive species (17 plants and 3 animals) are known to occur within ZNP. Only those species having habitat requirements similar to the habitats found within the Project Area are described below. The following location and habitat descriptions for the sensitive plants are summarized from Welsh (1989). None of these sensitive plant species were observed during a field evaluation of the area conducted in 2000 by JBR biologists. Prior to construction activities being initiated, site-specific surveys surrounding proposed pole locations would be conducted as mentioned in Section 2.4.1 to search for these species.

Sensitive Plant Species

Zion rockcress (*Draba asprella* var. *fosteri* / *zionensis*) - This plant grows in sandy crevices throughout the middle and upper elevations of ZNP and is known to occur on Navajo Sandstone, Moenkopi, and Kaibab Limestone formations.

Canaan daisy (*Erigeron canaani*) - This plant grows in crevices throughout the Park wherever sandstone is exposed.

Religious daisy (*Erigeron religiosus*) - This species is found in sandy depressions and alluvium in the Clear Creek area, on gravel and sand bars in and along the Virgin River in Zion Canyon, and along the west side of the Park.

Corymb buckwheat (*Eriogonum corymbosum* var. *matthewsiae*) - This species is known from the Chinle and Moenkopi formations almost exclusively and is found near Springdale and within the Petrified Forest sector of ZNP.

James buckwheat (*Eriogonum jamesii* var. *rupicola*) - This plant is found in crevices and sandy depressions mainly on the Navajo Sandstone formation.

Redroot buckwheat (*Eriogonum racemosum* var. *zionis*) - This plant is common throughout sandy sites within ZNP and is uncommon or lacking within the Petrified Forest area.

Jones goldenaster (*Heterotheca jonesii*) - This species occurs on sandstone crevices and sandy depressions

within Garfield, Kane, and Washington counties. Within ZNP it is found in the Checkerboard Mesa, Cave Valley, and Pine Spring Canyon areas.

Low penstemon (*Penstemon humilus* var. *obtusifolius*) - This plant occurs sporadically throughout ZNP, but is most common on upper elevation sandstone areas where it grows in sandy depressions and crevices. However, it has also been found on basalt and can grow at lower elevations if shade is present.

Phacelia (*Phacelia cephalotes*) - This species grows in the Petrified Forest area of ZNP where it is found on gypsiferous outcrops of the Chinle Formation.

Utah spikemoss (*Selaginella utahensis*) - This plant in known from Kane and Washington counties, Utah, and from southern Nevada. Within ZNP it grows at middle to upper elevations where it associated with sandstone crevices.

Zion tansy (*Sphaeromeria ruthiae*) - This plant is found in shaded cool sites where it grows in sandstone. Within ZNP it is found in Refrigerator Canyon, Zion Narrows, and The Barracks region.

Charleston mountain violet (*Viola purpurea* var. *charlestonensis*) - This species is found in dry habitats mainly on the Carmel Formation and is found within ZNP along the margin of Horse Pasture Plateau.

The three sensitive animal species that were identified as having the potential to occur within the Project Area are described below:

Peregrine Falcon (*Falco peregrinus*) - Peregrine falcons nest in cracks, holes, and small caves that are found on tall cliff faces. These nests, referred to as eyries, are often, but not always, located near water. Peregrines prey on a variety of bird species including waterfowl, swallows, shorebirds, dove, and meadowlarks (*Sturnella neglecta*) (USUES 1998). Within ZNP, 2 peregrine eyries are located within approximately one mile of the existing 34.5 kV power line, and thus within one mile of the Proposed Action. Additional potential nesting sites also occur within close proximity of the Project Area.

Gila Monster (*Heloderma suspectum*) - In Utah, the Gila monster prefers habitat that includes large rocky shelves, sandy areas, and creosote-sagebrush areas (UCDC 2000). Gila monsters are known to occur within ZNP; a Gila monster sighting within the Project Area (Huber Wash) was reported to Zion personnel several years ago (personal communication, Mary Hunnicutt - ZNP wildlife biologist 2000).

Ferruginous Hawk (*Buteo regalis*) - The ferruginous hawk is found in open and dry country where it usually nests in trees, but it will also commonly nest on cliffs or on the ground (Peterson 1997). In southern Utah, the ferruginous hawk tends to nest in the transition area between the pinyon-juniper woodland and the sagebrush step (UDWR study, cited in Zion 1997). This hawk is known to occur within ZNP during the breeding season, and to a lesser extent, during the winter (Zion 1997). No ferruginous hawk nesting areas are known within the Project Area and no individuals or nests were found during environmental surveys of the area conducted in 2000 by JBR biologists.

3.4 Wildlife

The vegetation habitats that occur within the Project Area do not represent unique habitats that are not widely available in ZNP and Washington County. Many species of animals are present in ZNP, including 75 mammals

and 271 birds (Zion 1999:5). Within the Project Area, several mammals, birds, and reptiles are commonly seen. During surveys, JBR biologists observed several species within the Project Area. Those species included the ash-throated flycatcher (*Myiarchus cinerascens*), broad-tailed hummingbird (*Selasphorus platycercus*), black-throated sparrow (*Amphispiza bipower lineata*), rock wren (*Salpinctes obsoletus*), American kestrel (*Falco sparverius*), northern flicker (*Colaptes auratus*), mourning dove (*Zenaida macroura*), Gambel's quail (*Callipepla gambelii*), mule deer (*Odocoileus hemionus*), white-tailed antelope groundsquirrel (*Ammospermophilus leucurus*), coyote (*Canis latrans*), mountain lion (*Felis concolor*), great basin spade foot toad (*Scaphiopus intermontanus*), leopard lizard (*Gambelia wislizenii*), and others.

3.5 Visual Resources

ZNP receives over 2.5 million recreation visits each year (Zion 1999:123). Travelers from all over the world visit the Park to partake in its spectacular scenery. For many of these visitors, enjoying the landscape of ZNP without signs of modern development is part of a quality experience. This lack of obvious modern development was the reason for a legislative recommendation to Congress, by the Secretary of Interior (1974), for more than 90% of ZNP lands to be designated as Wilderness (in conformance with the Wilderness Act of 1964, Public Law 88-577). Due partially to the pre-existence of the current power line, the lands within the Project Area were not included in the wilderness recommendation (Zion 1974, amended 1978). However, lands within a half-mile of the existing power line were recommended for wilderness designation. Additional discussion on the wilderness issue is presented in Section 4.2.9. It is likely that some portions of the existing power line are visible from within the recommended Wilderness area.

Presently, the existing power line is visible from several locations commonly used inside and outside of ZNP. Travelers using SR-9 can observe the existing power line where it occurs closest to the southern boundary for approximately a one-mile stretch, west of the Rockville substation. Hikers using both the Coalpits Wash and/or the Chinle Trails can also observe the existing power line in various locations. Both of these trails within ZNP cross the power line.

The Grafton Historic Townsite also receives many visitors each year. Grafton, located 2 miles west of Rockville, was first settled in 1859. The town has been vacant now for many years, yet several historic structures, including four houses, a church/schoolhouse, and four associated out buildings remain standing. These structures are privately owned with the exception of the church/schoolhouse, which is owned by Washington County. The Grafton Heritage Partnership has been active in restoring and preserving these buildings and in purchasing land around the site (GHP 2000). From Grafton, visitors can observe up to three existing power poles to the northwest on the plateau west of Coalpits Wash.
Visual simulations displaying the existing conditions in several locations as described above are included in Appendix C.

On BLM administered land that is located adjacent to SR-9, avoidance areas have been designated (as displayed on Figures 2-1 through 2-3) by the SGRMP (1999). This designation was approved in order to protect the viewshed and scenic qualities of SR-9. These lands have been assigned a Visual Resource Management (VRM) rating of Class II. Under this objective, development should not substantially detract from the scenic quality of the area (BLM 1998:3.42).

3.6 Soundscapes

ZNP strives to preserve the natural sounds associated with the physical and biological resources of the area. The

Project Area occurs less than two miles away, much closer in some areas, to SR-9 the major highway and access road into ZNP. The Project Area also occurs less than two miles away from the towns of Rockville and Springdale. The proximity of SR-9 and the local developed areas make it difficult for visitors using the Project Area to experience natural sounds in an unimpaired condition. Ambient noise sources currently generated within a discernible range of sound recognition in the Project Area include vehicular traffic along SR-9, occasional aircraft overflights and helicopters from the helipad near Coalpits Wash, local town activity, and natural sounds (e.g., wind, thunder, birds, etc.).

3.7 Cultural Resources (Archeology, Ethnography and Cultural Landscapes)

Human use of the ZNP landscape dates back to at least 6,000 B.C. Archeologists have divided this long span of human history into four cultural periods, each characterized by distinctive technological and social adaptations.

- During the **Archaic** period (approximately 6000 B.C.- A.D. 500), small groups hunted game and collected wild plants, seeds, and nuts across the broad expanse of the Great Basin and western Colorado Plateau. By about 300 B.C., some Archaic groups had begun to supplement wild foods in their diets by cultivating small patches of corn and squash along rivers and near springs. Archeologists have labeled these groups the "Basketmakers", because of the abundance of coiled and twined baskets found in many late Archaic sites.

- Within a few centuries, small-scale gardening had intensified into the full time horticulture that typifies the **Formative** period (A.D.500-1300). Two distinctive horticultural groups, the Virgin Anasazi and Parowan Fremont, appear in the archeological record of ZNP during this period.

- The time span between A.D. 1300 and the late 1700s has been described as the "**Neo-Archaic**" by some researchers, since the lifeways were reminiscent of the earlier adaptation. The Numic language speakers (Southern Paiute) were most likely the only occupants of the ZNP landscape during this time period.

- The **Historic** period begins in the late 1700s, with the exploration and settlement of southern Utah by Euro-Americans. In 1847, Brigham Young led members of the Church of Jesus Christ of Latter Day Saints (Mormons) to Utah Territory. Mormon pioneers were sent to settle the southern part of the territory. Towns like Shunesberg, Springdale, Grafton, Adventure, and Paradise sprang up along the upper Virgin River during the 1860s.

Contracted JBR archeologists conducted intensive archeological inventories, meeting the Secretary of the Interior Standards for Archeology and Historic Preservation, for both the Proposed Action route ROW and the Alternative A route ROW. The following is summarized from the subsequent inventory report (Jensen and Billat 2002):

> Proposed Action: Two eligible archeological sites were found on the Proposed Action route, one previously recorded site (42WS3983) and one newly recorded site (42WS4265). Site 42WS3983 is an historic artifact scatter with a historic oil well feature recorded in 2000 as part of the Coal Pits Burn Unit inventory. Site 42WS4265 is a segment of the remains of the original power line constructed in 1929 through the Park. This site consists of the original poles that were cut generally just above the ground and measure 8.5 inches in diameter. Crossbeams were noted near some cut poles as were ceramic insulator fragments, heavy gauge wire, bolts, metal support bands, and miscellaneous wood fragments. Some crossbeams had wood insulator posts intact with threaded ends to receive the insulator. Insulators were fine white ceramic with brown glaze and measured about 10 inches in diameter.
>
> Alternative A: Six archeological sites (three previously recorded and three newly recorded) were

identified. Three of the sites are recommended as eligible for listing on the National Register of Historic Places. The six sites consist of both prehistoric and historic resources and include, two lithic scatters, two habitation sites, an historic rock wall, and a segment of an historic telegraph power line.

State Route 9 (SR-9) was also evaluated. The construction of SR-9 was completed in 1930. It was originally known as the Zion's - Mt. Carmel Highway (Knowlton 1967). According to Knowlton (1967:288), this road was considered "Utah's most spectacular and most publicized road project..." It was dedicated by Governor George H. Dern on July 2, 1930. SR-9 was partially constructed under the supervision of the Bureau of Public Roads due to its partial finance as a National Park Highway project. The remainder of the road was constructed as a regular federal-aid project. The highway is distinctive for its two tunnels that parallel the vertical face of the canyon wall within ZNP. The construction of the tunnels was necessary in order to make the ascent out of the canyon. SR-9 serves as a vital cross-mountain connection between I-15 and U.S. Highway 89 as well as a scenic route through ZNP. According to UDOT, SR-9 was completely upgraded in 1990. No intact segments of the original route were found in the project area.

Neither the Proposed Action or Alternative A route ROWs were inventoried and/or evaluated for American Indian traditional cultural properties or cultural landscapes specifically for this project. However, an ethnographic study of ZNP and Pipe Springs National Monument (see Stoffle et. al 1995) did not reveal any special concerns for either of the project areas. Both route ROWs may contain traditional cultural properties not identified in the ethnographic report for the Southern Paiute or other Indian tribes.

3.8 Recreation

ZNP receives over 2.5 million recreation visits each year (Zion 1999). During August 1997, ZNP staff recorded an average of 11,839 recreational visits each day (Zion 1999). These visitors travel from all around the world to partake in the many activities available within the Park. A survey conducted in July 1992 indicated that 21% of visitors were from foreign countries. The remaining visitors came from 44 states plus the District of Columbia and Puerto Rico (Zion 1999). The Project Area includes federal (ZNP and BLM), State, and private lands. Recreational opportunities available within the area include photography, hiking (Chinle and Coalpits Wash Trails exist within the Project Area), pic nicking, camping, horseback riding, wildlife watching, and site seeing on ZNP and other public lands. However, in comparison to other areas of the Park, the portion of the Project Area within the park receives relatively low recreational use.

3.9 Wilderness

The Wilderness Act of 1964 (Public Law 88-577, 88th Congress) defines a Wilderness Area as, "..an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions.." According to the Draft: General Management Plan/EIS (Zion 1999) portions of the Project Area, including the existing power line, occur within an area identified as Potential Wilderness. A designation of Potential Wilderness is assigned to lands that do not qualify for an immediate Wilderness designation due to temporary non-conforming or incompatible uses (Zion 1999). However, the Draft: General Management Plan/EIS does not serve as Zion's "official" Wilderness Recommendation and the Final: General Management Plan/EIS (Zion 2001), correctly depicts the accurate location of the designated Potential Wilderness lands. In addition, the Final Environmental Impact Statement/Wilderness Recommendation, Zion National Park (Zion 1974, amended 1978) serves as the governing document. Under this document and its accompanying map, Wilderness Plan, Zion National Park, Utah, it is evident that the Proposed Action would occur in an area identified as Non Wilderness (Appendix A, 1974 Recommendation and 1978 Amended).

3.10 Air Quality

Air quality within Washington County is generally good to excellent (Bill Wagner, personal communications 1997, cited in BLM 1998:2.12). In terms of Prevention of Significant Deterioration guidelines, ZNP is designated a Class I area under the Clean Air Act (BLM 1998 and Zion 1999). This designation allows only small incremental increases to pollutant levels and establishes protection for visibility and other related values (BLM 1998). Surrounding BLM lands are designated as Class II; this classification allows for a change in air quality associated with moderate, well-controlled growth (BLM 1998). Current local sources of pollution include particulate matter from wood stoves and campfires, vehicle emissions (Zion 1999), and road dust (BLM 1998). Long-distance transport of pollution occurs from regional sources, such as metropolitan areas and coal-fired generating plants (Zion 1999). These sources of pollution affect visibility by introducing haze into the sky.

3.11 Water Resources

There are no perennial streams, springs, or wetlands constituting water of the United States) in the Project Area. Coalpits Wash, the largest drainage that is crossed, has seasonal flow less than one cubic foot per second. All other channels in the Project Area flow only briefly following heavy rain. The power line in Alternative A would be located across SR-9 (on the north side) from the Virgin River for about 2,000 feet of its path. In all cases, surface disturbance would be 100 feet or greater from the active river channel and separated by the roadway.

3.12 Socioeconomics

The Project Area is located within eastern Washington County, Utah, which has experienced a tremendous increase in population growth over the last 20 years, mainly due to the growth of the city of St. George and neighboring communities. Washington County is the sixth largest county (81,204 persons) in the state and had a population growth rate of 5.8% between 1990-1999, 3.6% higher than the state average of 2.3%. The population growth of Washington County is expected to continue over the next 30 years, projected to increase over 35% (USDC 2001). The local populations of Rockville, Springdale, and Virgin are increasing due in large measure to their proximity to ZNP. Springdale, in particular, supports a growing tourist-related commercial business sector. According to the State of Utah's Demographic and Economic Analysis, the towns of Springdale, Virgin, and Rockville are projected to experience over a 50% increase in population growth over the next 20 years (DEA website), although Rockville citizens have expressed the desire to encourage limited growth (Town of Rockville 1999).

The towns of Rockville and Springdale serve as the southern gateway to the most heavily used areas of ZNP. The town of Rockville contains a few bed and breakfast accommodations and a photography school. The town of Springdale contains numerous lodging and food establishments, in addition to a variety of shops and galleries. These tourist related services tend to be seasonal in nature, typically with the busy season occurring in spring and summer. Annual tourism to ZNP has increased to an estimated 2.5 million visitors, creating the need for expanded visitor facilities in the Park, such as the new Zion Canyon Visitor Center and Transportation System (ZNP 1999) and commercial facility expansion in the local communities. Outages and power surges caused by voltage interruptions (unreliability) affect existing local businesses by lowering production, impacting customer services, and potentially reducing business revenues. Repeated power surges can shorten the use life of many types of business equipment, including air conditioning/heating units, refrigerators, and computers. Lowered productivity and higher equipment costs can pose serious economic obstacles for small business owners, like those in the surrounding communities. These local businesses and future expansion needs rely upon the power provided by the existing 34.5 kV power line. In addition to tourism, the local economy is also supported by ranching, fruit production, and the arts (Zion 1999).

3.13 Livestock Grazing

No livestock grazing is permitted within ZNP, including the vicinity of the project area, and boundary fences prevent livestock trespass. Limited grazing occurs within the Park on private inholdings. However, livestock grazing is an authorized use on BLM administered public domain lands that occurs adjacent to the southwestern boundary of ZNP where Alternative A is proposed. Alternative A occurs within the Coalpits Allotment, encompassing approximately 1,065 acres of public land administered by the St. George Field Office, BLM . There is one permittee who is authorized to graze 48 head of cattle from November 1 to December 31 (personnel communication on 2/26/2001 - Kim Leany, BLM Range Conservationist).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Methodology

4.1.1 General

Impacts are described in terms of context (are the effects site-specific, local, or even regional?), duration (short- or long-term?), and intensity (negligible, minor, moderate, or major?). The thresholds of change for the intensity of an impact are defined as follows.
Negligible - the impact is at the lowest levels of detection
Minor - the impact is slight, but detectable
Moderate - the impact is readily apparent
Major - the impact is a severe or adverse impact or of exceptional benefit

4.1.2 Impairment of Park Resources or Values

In addition to determining the environmental consequences of the preferred and other alternatives, National Park Service policy (Management Policies, 2001) requires analysis of potential effects to determine whether or not actions would impair park resources.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute and impairment. An impact would be more likely to constitute an impairment to the extent it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. A determination on impairment is made in the Environmental Consequences section for each alternative.

4.1.3 Cultural, Historical, and Prehistoric Resources

The National Historic Preservation Act (NHPA) requires agencies to take into account the effects of their actions on cultural resources that are listed or eligible for listing on the National Register of Historic Places. If an action could change the characteristics that qualify a cultural resource for inclusion in the National Register, it is considered to have an effect. In accordance with the NHPA, all proposed undertakings must identify historic properties that occur within the Area of Potential Effect (APE). Both the Proposed Action and Alternative A route ROWs were inventoried for archeological resources by (contracted) JBR archeologists. This inventory meets the *Secretary of the Interior's Standards for Archeology and Historic Preservation*. Each new site encountered was recorded on an Intermountain Antiquities Computer System (IMACS) site form. Each site was evaluated for National Register eligibility. The results of the inventory were summarized in an archeological report (Jenson and Billat 2001).

The Park will continue to consult with affiliated American Indian tribes to determine the status of ethnographic resources in the Proposed Action and Alternative A route ROWs. For the purpose of analysis to potential impacts to cultural resources, the following will be used:

Negligible-the impact is at the lowest levels of detection for National Register properties, there is no change in any character-defining features of the resource (no potential to cause effects)
Minor-the impact is slight, but detectable (no historic properties affected)
Moderate-the impact is readily apparent but would not be harmful to those characteristics that qualify the property for inclusion on the National Register (no historic properties adversely affected)
Major-the impact is a severe or adverse impact to National Register eligibility, the effect would be harmful to character-defining features (historic properties are adversely affected)

4.2 Impacts to Resources

4.2.1 Soils and Geology

Impacts of the Proposed Action: Implementation of the Proposed Action would cause surface disturbance of approximately 27.1 acres (see Table 2.1). No roads would be built, no off-road driving would occur, and disturbed areas would be reclaimed. Thus, with the exception of an area measuring approximately 5' x 5' around each pole (total combined area of 0.05 acres for all proposed poles), all surface disturbance would be temporary in nature until reclamation is completed and successful. In addition, up to approximately 100 yds^3 of soil would be excavated for each pole, assuming a two-foot wide and a maximum 10-foot deep hole for each pole. The maximum 100 yds^3 of soil would be stockpiled and used during reclamation activities. The majority of the excavated soil would be returned to the hole and used to stabilize the new pole. Unused soil would be spread out evenly around each new pole. Impacts to soil and geology would be minor.

Impacts of Alternative A: Implementation of Alternative A would cause surface disturbance of approximately 34.9 acres (see Table 2.2). No new roads would be built and all disturbed areas would be reclaimed. Thus, with the exception of an area measuring approximately 5' x 5' around each pole, all surface disturbance would be temporary in nature until reclamation is completed and successful. Similar to the Proposed Action, up to approximately 100 yds^3 of soil would be excavated for each pole. This maximum total 100 yds^3 of soil would be stockpiled and used during reclamation activities. The majority of the excavated soil would be returned to the hole and used to stabilize the new pole. Unused soil would be spread out evenly around each new pole. Impacts to soil and geology would be moderate.

Impacts of the No Action Alternative: Under the No Action Alternative, the majority of previously undisturbed soils would remain unaltered and naturally occurring erosion would continue at the present rate. Future maintenance would eventually occur along the existing power line and would impact soils to some degree, depending upon the specific level of activity.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's soils and geology.

Conclusion: Parkwide, little change would be likely to ZNP's soils and geology based on either the Proposed Action or Alternative A. Under the Proposed Action, no roads would be built, and, with the exception of an area measuring approximately 5' x 5' around each pole, all surface disturbance would be temporary in nature until reclamation is completed and successful. In addition to disturbance around each pole, under Alternative A, approximately 3.1 acres of new road construction would occur.

4.2.2 Vegetation

Impacts of the Proposed Action: Implementation of the Proposed Action would impact a maximum of approximately 27.1 acres of juniper, blackbrush, and sagebrush communities. The majority of the disturbance would result from trampling associated with construction activities from installation of the power poles and the removal of the existing poles. Some destruction of individual plants would occur from these construction activities. These impacts would be isolated and occur only within the maximum 100 X 100 foot area surrounding each existing pole and proposed pole locations. Impacts to vegetation would be minor.

Impacts of Alternative A: Implementation of Alternative A would impact approximately 34.9 acres of juniper, blackbrush, and sagebrush communities along with annual grasses and forbs that occur within the UDOT ROW. The majority of the disturbance would result from trampling associated with construction activities from installation of the power poles and removal of the existing poles. Some destruction of individual plants would occur from the construction activities. The impacts to vegetation resources would be isolated and occur only within the maximum 100 X 100 foot area surrounding each existing pole and proposed pole locations.

Approximately eight percent of the impacts to vegetation resources would occur during access road construction. A 15-foot wide access road, up to 9,000 feet long would completely remove all existing vegetation and would be left unreclaimed for future access needs. Impacts to vegetation would thus be moderate.

Impacts of the No Action Alternative: Under the No Action Alternative, the current trend for the majority of existing vegetation communities would continue and remain unaltered. Future maintenance would eventually occur along the existing power line and would impact existing vegetation resources to some degree, however the degree of impact is unknown until maintenance activities are required and the level of activity is specified.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's vegetative communities.

Conclusion: Parkwide, little change would be likely to ZNP's vegetative communities based on either the Proposed Action or Alternative A. Under the Proposed Action, the majority of the disturbance would result from trampling associated with construction activities. In addition, under Alternative A a 15-foot wide access road, up to 9,000 feet long would completely remove all existing vegetation and would be left unreclaimed for future access needs.

4.2.3 **Special Status Species** (Threatened, Endangered, Proposed, Candidate, and Sensitive)

Impacts of the Proposed Action: The Proposed Action, if approved, would not adversely affect any federally listed species (a Biological Assessment has been prepared and a concurrence letter will be requested from the USFWS). Three federally listed species are known to occur or have the potential to occur within the Project Area: desert tortoise, bald eagle, and Shivwits milkvetch. Appropriate Environmental Protection Measures, outlined in Section 2.4.1 would be implemented to prevent any potential adverse effects to these species. Bald eagles that could utilize the Project Area for feeding activities might avoid the area or be displaced during construction activities. Displaced bald eagles would tend to move off into adjacent undisturbed areas that abundantly surround the Project Area. Impacts to bald eagles would thus be considered moderate. Surveys for the presence of Shivwits milkvetch and desert tortoise burrows would occur prior to initiation of construction activities. Identified locations would be marked (e.g., flagged or fenced) for avoidance. Proposed pole locations would be moved, if necessary, in order to avoid populations of Shivwits milkvetch or a tortoise burrow(s). Impacts to either of these two species should be minor to negligible.

Sensitive wildlife species that could utilize the area for feeding activities include peregrine falcons and ferruginous hawks. These species would likely avoid the area or be displaced during construction activities. Environmental Protection Measures would be implemented to avoid disruption to nesting behavior. The only other potentially impacted sensitive species would be the Gila monster. During construction activities, the Gila monster would tend to avoid these areas or be displaced temporarily until activities were completed. Individual animals may temporarily alter their typical behavior or modify their normal daily patterns; however, none would likely be harmed and populations on whole would not be affected. Impacts to sensitive wildlife would thus be considered moderate.

None of the 12 special status plants that have the potential to occur within the Project Area are expected to be impacted by the Proposed Action. Pre-construction surveys for the sensitive plants within the 100 X 100 foot disturbance area designed for each proposed and existing pole location would be conducted, thus essentially eliminating any potential affects to individuals species. Impacts to sensitive plant species would be minor.

Impacts of Alternative A: Similar impacts as described for the Proposed Action would occur for Alternative A. Identical Environmental Protection Measures as described for the Proposed Action, would be implemented, thus avoiding any adverse affects to special status animal or plant species.

Impacts of the No Action Alternative: Under the No Action Alternative, sensitive animal species would continue to use the area as they do now and no sensitive plants that may occur with in the area would be subject to possible disturbance. However, when future maintenance activities are needed along the existing power line, pre-construction plant surveys may be required depending upon the proposed level of activity and potential disturbance impact.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on Project Area's sensitive species or their habitats.

Conclusion: The Project Area provides habitat for several sensitive species. However, the Environmental Protection Measures outlined in Section 2.4 would be implemented to prevent any potential adverse effects to these species.

4.2.4 Wildlife

Impacts of the Proposed Action: The Proposed Action would have no long-term impacts on wildlife. A net

permanent loss of 0.05 acres of habitat would eliminate a small area of forage and thermal cover. Some small, less mobile individuals may be killed or injured during construction activities, but populations on whole would not be affected. Similarly, some individuals may disperse from the area because of the increased noise level during construction. However, the noise/activity impact to wildlife would be temporary during the construction period when equipment and workers would be present. Over the life of the project, effects to wildlife associated with the power line are expected to be minor because the area of lost habitat would be very small compared to the large areas of undisturbed habitat in the surrounding areas.

A major beneficial impact from the upgraded 69 kV power line would include raptor protection (raptor safe construction), which consists of installing 138 kV rated insulators, which are longer in length to allow for the wingspan of the majority of raptors to avoid collisions when taking off after being perched on a structure.

Impacts of Alternative A: Additional impacts to wildlife other than those already described for the Proposed Action would occur from the increase in a net permanent disturbance of up to 3.14 acres of habitat from the construction of the access road and the additional poles. A major beneficial impact from raptor protection, as described for the Proposed Action would occur under this alternative.

Impacts of the No Action Alternative: Under the No Action Alternative, wildlife would continue to use the area as they do now. During future maintenance activities, some habitat disturbance and temporary displacement of wildlife would occur. In addition, the existing power line would continue to lack raptor electrocution prevention design construction. The existing poles could, however, be retrofitted with perching prevention structures; but, these structures would be highly visible and costly to install. No permanent or long-term impacts would be expected.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's wildlife species or their habitats.

Conclusion: Implementation of the Proposed Action or Alternative A would have no negative long-term impacts on wildlife or their habitats. Some small, less mobile individuals would be forced to disperse from the area or may be killed or injured during construction activities, but populations on whole would not be affected. Under both the Proposed Action and Alternative A, the upgraded power line would include raptor protection. Under the No Action Alternative, the existing power line would continue to lack raptor protection devices.

4.2.5 Visual Resources

Impacts of the Proposed Action: During construction activities, short-term, moderate impacts on visual resources would occur from implementation of the Proposed Action. The use of a helicopter to transport all construction equipment and necessary supplies for the upgraded power line, removing the existing power line, and the disturbance around each upgraded and existing pole would temporarily contribute to the short-term impact on visual resources. Completion of the construction activities and reclamation efforts following the construction of the upgraded power line and removal of the existing power line would mitigate for the short-term temporary impacts of the Proposed Action.

Eighty-six 50 to 80 foot tall power poles (mostly 60 feet high), associated guy wires, and power lines between poles would be installed within ZNP and be visible to users in the area. The upgraded line would increase the number of double pole structures by 16 and the number of triple pole structures by 5 from the existing power line. Visual simulations at several sensitive locations (Appendix C) revealed that under the Proposed Action, portions of the upgraded power line would continue to be visible from the Coalpits Wash Trail and the Chinle Trail. The

upgraded poles would be taller, approximately 15 to 20 feet, and would be more prominent than the existing structures. The new power line would be more reflective than the existing power line, and thus would potentially be more obvious. However, this would only be a short-term impact, as the power line would dull to the current reflectiveness within the first 5 years. Aviation warning devices (orange balls), may need to be placed on the upgraded power line near Coalpits Wash, as determined by the Park superintendent. If needed, five 36-inch balls would be used on the approximately 1,122-foot span.

Due to the upgraded power line being situated north of the existing power line and behind the ridge line west of Coalpits Wash, the upgraded power line would not be visible from the historic town of Grafton and the three single pole structures that are currently visible from Grafton would be removed. This would be a beneficial impact.

Although the power line would be visible to visitors of ZNP using the immediate area, it would be installed in a location not as heavily visited, and would thus not likely reduce the quality of the visual experience for those visitors that maintain to established roadways. However, the upgraded power line would be visible to backcountry visitors accessing the areas, some of which are recommended as wilderness, in and around the Project Area. The upgraded, taller poles and the reflective line (during the first five years) would continue to have a long-term negative impact (upgraded poles would be more easily visible) along approximately a one-mile stretch of road in which the existing line is currently visible from. To these visitors, viewing man-made structures within ZNP could have a moderate impact on their overall visual experience. Additional impacts to visual resources are described in Section 4.2.7.

Impacts of Alternative A: As described for the Proposed Action, during construction activities short-term, moderate impacts on visual resources would occur. The use of a helicopter to transport construction equipment and necessary supplies for the upgraded power line in some areas, removing the existing power line, and the disturbance around each upgraded and existing pole would temporarily contribute to the short-term impact on visual resources. In addition, approximately 3.1 acres of access road would be constructed in areas outside of ZNP where feasible. Reclamation efforts following the construction and removal of both the upgraded and existing power line would mitigate for the short-term temporary impacts associated with disturbance activities. The access road would be left unreclaimed, having a moderate impact on visual resources, to allow for future maintenance access along the upgraded power line and the road would be visible in some areas to private landowners. It is unlikely that the access road would be readily observable from within ZNP.

In contrast to the Proposed Action, under Alternative A the new power line would run south to SR-9, through the designated BLM avoidance area where it would then parallel the highway for approximately two miles and the southern boundary of ZNP for another two miles before heading north and tying into the existing power line (displayed in Figure 2-2). Thus, under this alternative, less of the new power line would be installed within ZNP; however, the portions of the power line outside ZNP would be installed in areas currently lacking a power line, within areas designated as avoidance and VRM Class II areas, and immediately adjacent to a well traveled highway. Based on the SGRMP (1999:2.6, LD-19): "New rights-of-way will be granted in these areas (avoidance areas) only when feasible alternative routes or designated corridors are not available." Since an existing corridor is available, implementation of Alternative A would require an amendment to the SGRMP. Amending the SGRMP would require both an additional NEPA and public planning process to support the amendment. This additional time requirement would not be in scope with the Purpose and Need of the proposed project.

Visual simulations (Appendix C) display the visual impact that would occur in several locations along SR-9 under Alternative A. Installing the new power line in areas currently lacking power lines would have a moderate impact on the visual resources in those areas.

Under Alternative A, the upgraded power line would not be visible from the historic town of Grafton, or from the majority of the Coalpits Wash and/or Chinle Trail(s), especially if heading north and northwest. This would be a major beneficial impact. Additional impacts to visual resources are described in Section 4.2.7.

Impacts of the No Action Alternative: Under the No Action Alternative, visual resources would exist as they do now. In certain areas the existing power line would remain visible to visitors of ZNP, along SR-9, and from the town of Grafton. No power line would be installed along SR-9 or on neighboring lands that currently lack power lines.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's visual resources.

Conclusion: During construction activities, short-term, moderate impacts on visual resources would occur from implementation of the Proposed Action or Alternative A. Under the Proposed Action and Alternative A, the upgraded power line would not be visible from the historic town of Grafton and the three single pole structures that are currently visible from Grafton would be removed. Under the Proposed Action, portions of the upgraded power line would continue to be visible from the Coalpits Wash Trail and the Chinle Trail. Under Alternative A, the upgraded power line would not be visible from the majority of the Coalpits Wash and/or Chinle Trail(s), especially if heading north and northwest.

4.2.6 Soundscapes

Impacts of the Proposed Action: During construction activities, the existing noise levels would increase temporarily. The increase in noise would be due primarily to the helicopter transport equipment and construction personnel and removing the existing power line. Depending upon the size of the helicopter to be used, noise generated from the helicopter might be heard up to several miles away. Travelers along SR-9 near the Project Area, residents of the towns of Rockville and Springdale, and visitors in the area would be able to hear construction activities occurring in the area. The potential for blasting would also contribute to the temporary increase in noise levels during construction activities. The noise generated from the construction activities would be moderate and temporary, lasting until construction activities were completed. Once construction activities were completed, the noise level would return to pre-construction levels.

Impacts of Alternative A: Under Alternative A, noise levels would be the same as described for the Proposed Action. However, the use of the helicopter would be minimized because a large portion of the upgraded power line would be located outside of the Park where vehicle access is permitted. Once construction activities are completed, the noise level would return to pre-construction levels.

Impacts of the No Action Alternative: Under the No Action Alternative, noise levels within the Project Area would continue at current levels.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's soundscapes.

Conclusion: During construction activities, the existing noise levels would increase temporarily under either the Proposed Action or Alternative A. The increase in noise would be due primarily to the helicopter transport equipment and construction personnel and removing the existing power line. Under Alternative A, the use of a helicopter would be minimized because a large portion of the upgraded power line would be located outside of the

Park where vehicle access is permitted.

4.2.7 Cultural Resources (Archeology, Ethnography, and Cultural Landscapes)

Impacts of the Proposed Action: Implementation of the Proposed Action could adversely impact presently unknown subsurface archeological resources during pole placement. Adverse impacts could be avoided resulting in a minor or no impact by spanning eligible sites, depending upon the need for actual pole placement and the implementation of Environmental Protection Measures outlined in Section 2.4.1. If avoidance is not an option, further mitigation will be required, such as data recovery, prior to pole placement. It will be at the discretion of the Park archeologist to determine when monitoring is needed for pole excavations. Site-specific information for cultural resources is summarized in the Conclusion Section below.

Potential adverse visual impacts to view sheds and ground disturbance may occur by pole replacement activities to presently unknown ethnographic resources and cultural landscapes if those resources are not identified during the consultation process. Mitigation to reduce adverse impacts to known resources will be done as practical to achieve a minor to moderate impact.

The Project Area was not identified as a potential cultural landscape during a reconnaissance survey conducted in 1999 (K. Cypher 1999). Even if a cultural landscape did exist, the power line would not be considered a contributing feature due to a loss of integrity resulting from pole and line replacement in 1982 (personal communication, T. Keohan, 2002).

Impacts of Alternative A: Implementation of Alternative A could adversely impact presently unknown subsurface archeological resources during pole placement. Adverse impacts could be avoided resulting in a minor or no impact by spanning eligible sites, depending upon the need for actual pole placement and the implementation of Environmental Protection Measures outlined in Section 2.4.1. If avoidance is not an option, further mitigation will be required, such as data recovery, prior to pole placement. This may be required for up to three sites under this alternative. It will be at the discretion of the Park or BLM archeologists to determine when monitoring is needed for pole excavations. Site-specific information for cultural resources is summarized in the Conclusion Section below.

Potential adverse visual impacts to view sheds and ground disturbance may occur by pole replacement activities to presently unknown ethnographic and cultural landscape resources they are not identified during the consultation process. Mitigation to reduce adverse impacts to known resources will be done as practical to achieve a minor to moderate impact.
Further, while the Alternative A route ROW does not contain any designed landscape, prehistoric or historic features that would meet cultural landscape criteria, the view shed, which is the historic setting, may be impacted by the proposal.

Impacts of the No Action Alternative: Under the No Action Alternative, minor or no impacts would occur to archeological resources from future maintenance activities along the existing power line. Potentially adverse conditions may continue to unidentified ethnographic or cultural landscape resources.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's cultural resources.

Conclusion: Implementation of the Proposed Action or Alternative A could adversely impact presently unknown subsurface archeological resources during pole placement. Adverse impacts could be avoided resulting in a minor or no impact by spanning eligible sites, depending upon the need for actual pole placement. If avoidance is not an

option, further mitigation will be required. Data recovery would be conducted by contracted archeologists, meeting professional standards, under the supervision of the Park archeologist. Affiliated Indian tribes, the Utah State Historic Preservation Officer, and appropriate agency archeologists would be notified if an inadvertent discovery of human remains occur in the Project Area. Construction would halt in the immediate area of the discovery until consultation and mitigation is addressed.

Summary of Impacts to Known Archeological Sites

Site #	National Register Significance (Recommendation)	Impacts from the Proposed Action Alternative	Impacts from Alternative A	Impacts from the No Action Alternative
42WS130 Habitation Site	Eligible	No Historic Properties Affected	No Adverse Effect – Site avoided by placement of poles outside of site.	No Historic Properties Affected
42WS138 Habitation Site	Eligible	No Historic Properties Affected	No Adverse Effect – Site avoided by placement of poles outside of site.	No Historic Properties Affected
42WS414 Lithic scatter	Ineligible	No Historic Properties Affected	No Historic Properties Affected	No Historic Properties Affected
42WS3983 Historic scatter	Eligible	No Adverse Effect – Site avoided by placement of poles outside of site.	No Historic Properties Affected	No Historic Properties Affected
42WS4107 Lithic scatter	Ineligible	No Historic Properties Affected	No Historic Properties Affected	No Historic Properties Affected
42WS4108 Historic stone wall	Ineligible	No Historic Properties Affected	No Historic Properties Affected	No Historic Properties Affected
42WS4109 Historic telegraph line	Eligible	No Historic Properties Affected	No Adverse Effect	No Historic Properties Affected
42WS4265 Historic power line	Eligible	No Adverse Effect to Historic Properties – New power line 50 feet south of existing line.	No Historic Properties Affected	No Historic Properties Affected

4.2.8 Recreation

Impacts of the Proposed Action: Implementation of the Proposed Action could temporarily limit ZNP recreational opportunities within the immediate Project Area during construction activities. The use of a helicopter and general construction activities would tend to detract from the hiking, scenic viewing, and other recreational uses in the area. Temporary use restrictions, such as trail closures on the Coalpits Wash Trail and the Chinle Trail could occur during construction activities in these areas to ensure visitor safety. These impacts would be moderate and short-term. Additional impacts to recreational resources are described in sections 4.2.5, 4.2.6, and 4.2.9.

Impacts of Alternative A: Under Alternative A, impacts to recreational activities would be similar to those described for the Proposed Action, except that a large portion of the Project Area would occur outside of ZNP. The majority of recreational activities (i.e. hiking on the Coalpits Wash and Chinle Trails) within ZNP would be unaffected by the implementation of this alternative, especially farther away from the Park boundary. Moderate temporary and permanent impacts to scenic viewing would occur along SR-9 during construction and following

construction in areas located close to the highway. Additional impacts to recreational resources are described in sections 4.2.5, 4.2.6, and 4.2.9.

Impacts of the No Action Alternative: Under the No Action Alternative, recreationists would generally continue to use the area as they do now without any restrictions or limited access. Some future maintenance activities could temporarily impact recreational activities depending upon the location and degree of the maintenance activities needed.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's recreational resources.

Conclusion: Implementation of the Proposed Action or Alternative A could temporarily limit recreational activities within ZNP and the immediate Project Area during construction activities. The use of a helicopter and general construction activities would tend to detract from the hiking, scenic viewing, and other recreational uses in the area. Temporary use restrictions, such as trail closures on the Coalpits Wash Trail and the Chinle Trail could occur during construction activities in these areas to ensure visitor safety

4.2.9 Wilderness

Impacts of the Proposed Action: Under the Proposed Action, no construction activities would occur on lands recommended as wilderness or potential wilderness. However, from within certain locations in recommended wilderness in ZNP, construction related activities could be heard and potentially the upgraded power line could be visible. This could result in moderate short-term sound impacts and moderate long-term losses to quality experiences related to hiking, scenic view sheds, solitude, and other recreational activities in area of ZNP where the upgraded power line is visible.

Impacts of Alternative A: As with the Proposed Action, Under Alternative A, no construction activities would occur on lands recommended as wilderness or potential wilderness. Similarly, construction related activities and potentially the upgraded power line could be visible from within certain locations in lands recommended as wilderness or potential wilderness.

Impacts of the No Action Alternative: Under the No Action Alternative, no impacts to lands recommended as wilderness or potential wilderness would occur. Current visual impacts associated with the existing power line would remain. Future maintenance activities could be visible from within certain locations in lands recommended as wilderness or potential wilderness.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's wilderness values.

Conclusion: Some construction activities would be visible and audible from recommended wilderness areas under both the Proposed Action and Alternative A, though this impact would be reduced in Alternative A because some of the construction would be further from the wilderness areas. Maintenance activities would be similarly audible under the No Action Alternative. All of these impacts would be local, short-term, and minor to moderate. Long-term visual impacts from wilderness areas would be minor to moderate, vary considerably with location and be greatest under the Proposed Action, slightly less under Alternative A, and slightly less than that under the No Action Alternative.

4.2.10 Air Quality

Impacts of the Proposed Action: Implementation of the Proposed Action would result in the release of short-term emissions related to the use of construction equipment (e.g., gas powered hand augers). The use of a helicopter would also be contributing to the emissions from generating dust from taking off, landing, and hovering. Fugitive dust from actual construction activities would also periodically increase airborne particulates within the immediate Project Area. However, because surface disturbance would be small, particle concentrations would be minor. Implementation of the Proposed Action would have a negligible impact to the overall air quality of the Project Area, ZNP, or Washington County.

Impacts of Alternative A: Impacts to air quality under Alternative A would be the same as described for the Proposed Action with the exception of additional ground disturbance and the decreased use of the helicopter. Under this alternative, approximately 11 acres of new disturbance would occur, increasing the temporary release of airborne particulates within the Project Area. The 3.1 acres of unreclaimed access roads could slightly contribute to dust emissions during wind events. However, implementation of Alternative A would have a negligible impact on the overall air quality of the Project Area, ZNP, or Washington County.

Impacts of the No Action Alternative: Under the No Action Alternative, the trend for air quality would continue from existing emission and fugitive dust caused from motorized vehicles and other sources in the area.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's air quality.

Conclusion: Implementation of the Proposed Action or Alternative A would result in the release of short-term emissions related to the use of construction equipment (e.g., gas powered hand augers). The use of a helicopter would also be contributing to the emissions from generating dust from taking off, landing, and hovering. Fugitive dust from actual construction activities would also periodically increase airborne particulates within the immediate Project Area. However, because surface disturbance would be small, particle concentrations would be minor. Under Alternative A, the 3.1 acres of unreclaimed access roads could slightly contribute to dust emissions during wind events.

4.2.11 Water Resources

Impacts of the Proposed Action: No wetlands or Waters of the U.S. would be impacted by the Proposed Action. The upgraded power line would be installed to span all existing washes and support poles would not impact the banks associated with the washes. Construction equipment would avoid all washes and implementation of the Proposed Action would not contribute to the sediment load within the watershed. Impact to water resources would be negligible or non-existent under the Proposed Action.

Impacts of Alternative A: Under Alternative A, impacts to water resources would be negligible or non-existent. Design measures to avoid potential impacts as described for the Proposed Action would be implemented.

Impacts of the No Action Alternative: Under the No Action Alternative, the trend for potential impacts to water resources would continue from existing natural erosion and sediment. Future maintenance activities would not impact existing water resources in the area.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the Project Area's water resources.

Conclusion: No wetlands or Waters of the U.S. would be impacted by the Proposed Action or Alternative A. The upgraded power line would be installed to span all existing washes and support poles would not impact the banks associated with the washes. Construction equipment would avoid all washes and implementation of the Proposed Action or Alternative A would not contribute to the sediment load within the watershed.

4.2.12 Socioeconomics

Impacts of the Proposed Action: Implementation of the Proposed Action would provide major beneficial impacts to the local communities. The upgraded power line would provide the necessary power supply to accommodate tourism, the projected population growth, and normal operation and future expansion of local businesses in the area. Outages and power surges caused by voltage interruptions (unreliability) that currently affect existing local businesses would be minimized.

Impacts of Alternative A: Under Alternative A, similar socioeconomic benefits as described for the Proposed Action would occur.

Impacts of the No Action Alternative: Under the No Action Alternative, outages and power surges caused by voltage interruptions (unreliability) that currently affect existing local businesses by lowering production, impacting customer services, and potentially reducing business revenues would continue at the existing trend. The unreliability would likely become more frequent as the load demand increases with increased tourism, population growth, and business expansion. Limits to growth may be needed in the future if the load demand increases beyond capacity.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on the socioeconomics in the Project Area.

Conclusion: The upgraded power line would provide the necessary power supply to accommodate tourism, the projected population growth, and normal operation and future expansion of local businesses in the area.

4.2.13 Livestock Grazing

Impacts of the Proposed Action: Since no livestock grazing is permitted in this part of ZNP and fences along the Park boundaries prevent livestock trespassing, implementation of the Proposed Action would not impact livestock grazing.

Impacts of Alternative A: Under Alternative A, livestock grazing activities may be temporarily impacted if construction activities occurred during the two months that cattle are authorized to graze in the Coalpits allotment. If this occurred, cattle would tend to move away from the construction activities and graze in adjacent undisturbed areas within the allotment. This impact would be minor.

Impacts of the No Action Alternative: Under the No Action Alternative, current livestock grazing would continue as authorized under current management.

Cumulative Impacts: No other actions are known that would have a cumulative negative impact on livestock grazing in the Project Area.

Conclusion: Since no livestock grazing is permitted in this part of ZNP and fences along the Park boundaries prevent livestock trespassing, implementation of the Proposed Action would not impact livestock grazing. Under

Alternative A, livestock grazing activities may be temporarily impacted if construction activities occurred during the two months that cattle are authorized to graze in the Coalpits allotment.

4.3 Summary of the Impairment of Park Resources or Values

Because the impacts described in the alternatives do not significantly affect a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of ZNP; (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park; or (3) identified as a goal in the Park's general management plan or other relevant NPS planning documents, there would be no impairment of the Park's resources or values.

5.0 REASONABLY FORESEEABLE IMPACTS AND CUMULATIVE IMPACTS

5.1 Methodology

The CEQ regulations, which implement NEPA, require assessment of cumulative impacts in the decision making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for both the no-action and proposed action alternatives.

Cumulative impacts were determined by combining the impacts of the Proposed Action and Alternative A with other past, present, and reasonably foreseeable future actions. Therefore it was necessary to identify other ongoing or reasonably foreseeable future actions in the Project Area and, if applicable, the surrounding region. The following actions were identified: cattle livestock grazing on BLM lands, power line maintenance, and development on lands adjacent to or near ZNP.

5.2 Reasonably Foreseeable Impacts

No known Reasonably Foreseeable Impacts resulting from planned development are anticipated within the Project Area. Some development in surrounding areas is occurring adjacent to the Project Area and consists of the Anasazi Plateau subdivision area east of the Rockville Bench, which will encompass approximately 400 acres. Alternative A would occur closest to the Anasazi Plateau subdivision and would be visible, depending upon topography and other factors, from within various portions of the subdivision area. In addition, ZNP has currently proposed a boundary adjustment that would encompass the BLM parcel that currently is located in Section 1, Township 42 South, Range 11 West.

5.3 Cumulative Impacts

Although no surface disturbances are planned within ZNP, any future development would need to be permitted and allowed under existing land use plans. Typically, development is low impact because of the mandate to protect the resources and scenic qualities of the Park. Presently, the greatest impact to the Project Area is the expansion and development within the local towns that occur outside ZNP, but immediately adjacent.

The Proposed Action contributes a minor amount of disturbance to the existing environment. Most of the disturbance would be temporary in nature until reclamation and natural revegetation of the disturbed areas is complete. A permanent loss of a maximum of 0.05 and 0.09 acres for the Proposed Action and Alternative A, respectively, of a previously undisturbed area would occur. The temporary and permanent disturbance contributes no additional impacts to sensitive natural resources in the area with the exception of the potential increase in visual impacts from the upgraded power line structures. In addition, the majority of the disturbance associated with this project would occur over a very short time period, approximately two to three months per year over a two-year period.

6.0 CONSULTATIONS AND COORDINATION

6.1 List of Preparers

JBR Environmental Consultants, Inc.

Greg Brown	Biologist	Project Manager
Eric Holt	Biologist/GIS Specialist	Document Preparation
Linda Matthews	NEPA Specialist	Document Preparation
Jenni Prince-Mahoney	Archeologist	Document Preparation

PacfiCorp dba Utah Power

Paul Henry	Project Manager
Tom Bytheway	Project Engineer
Lee Nielson	ROW Agent

6.2 Persons, Groups, Agencies, and Affiliated Indian Tribes Consulted

Zion National Park
- Dawna Ferris - NEPA Project Coordinator (2000 – 2001)
- Jeff Bradybaugh – Chief Resource Management & Research Division, Project Manager
- Jack Burns - Assistant Chief, Cultural Resource Analysis Resource Management & Research Division
- Mary Hunnicutt - Wildlife Biologist
- Denise Louie – Botanist
- Sarah Horton – Archeologist

Bureau of Land Management

St. George Field Office
- Dawna Ferris – NEPA Review (2002)
- Kathy Abbot - Lands, Rights of Way
- Kim Leany - Livestock Grazing
- Bob Douglas - Biological Resources

U.S. Fish and Wildlife Service — Ted Owens and Larry England

Affiliated Indian Tribes

Paiute Indian Tribe of Utah	Tribal Chair
Kaibab Band of Paiute Indians	Tribal Chair
Moapa Band of Paiute Indians	Tribal Chair
Las Vegas Paiute Tribe	Tribal Chair
Northern Ute Tribe	Tribal Chair
Hopi Tribe	Tribal Chair

Utah Division of State History

6.3 Public Involvement and Notification

This environmental assessment and assessment of effect form will be mailed to approximately 70 interested individuals, organizations, and agencies that respond to a postcard mailing in February 2001. Its availability will also be announced through a news release issued by the NPS and will be posted on ZNP's Internet Website. Additional copies are available by writing to: Superintendent, ZNP, Springdale, Utah 84767 or by calling 435-772-0142. The environmental assessment and assessment of effect form will undergo a 30-day public review period.

7.0 REFERENCES

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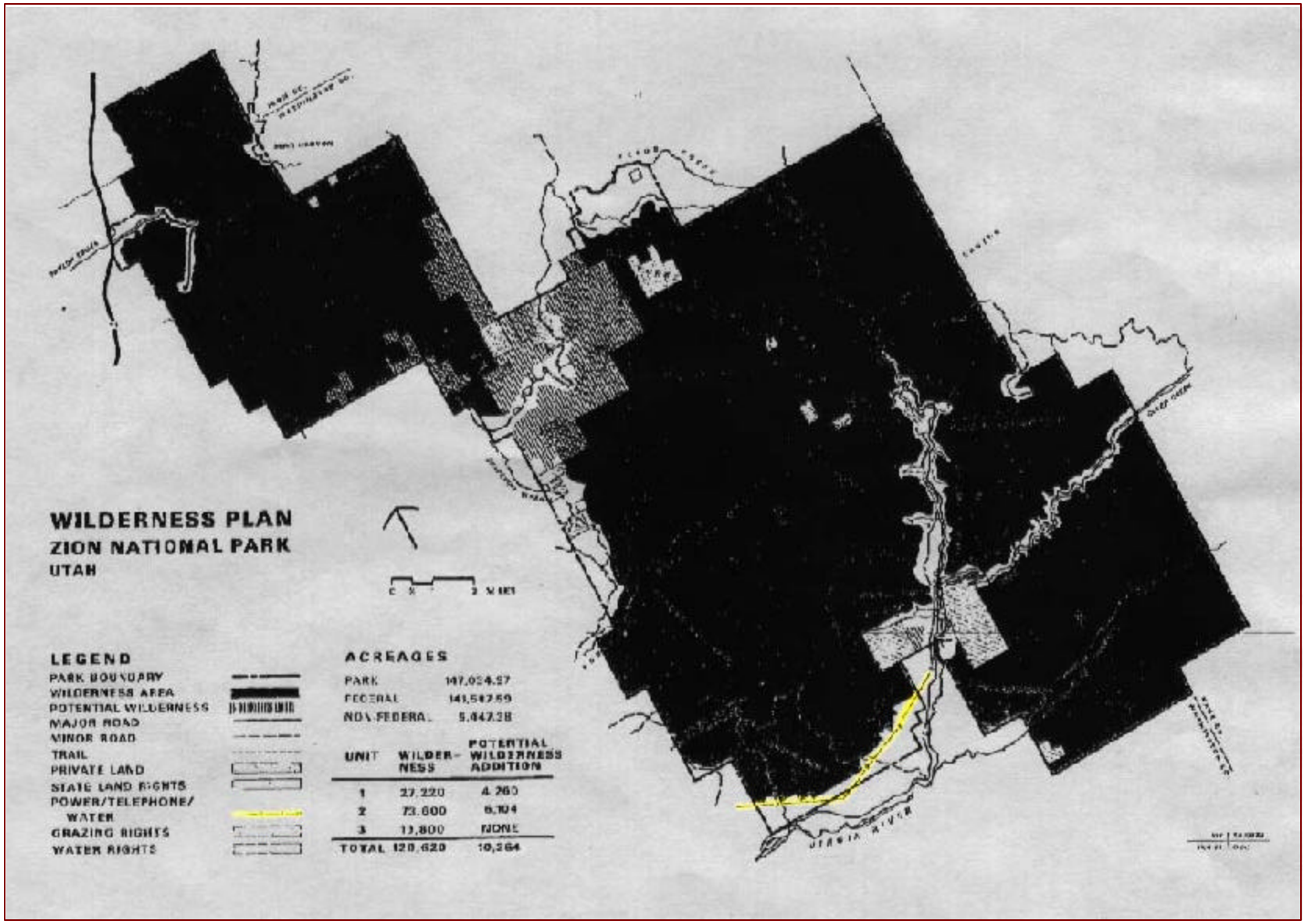
ROW Permit No: ROW-ZION-01-01.

APPENDIX A

WILDERNESS MAP



Wilderness Area Location Map (1978) highlighting the location of the existing power line.

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APPENDIX B

UDOT LETTER

November 16, 2000

Ms. Dawna Ferris
Resource Management and Research Division
Zion National Park
Springdale, UT 84757

Dear Ms. Ferris:

I am writing this letter in response to the proposal to rebuild or upgrade an existing Utah Power (PacifiCorp) overhead power transmission line that now runs through a portion of Zion National Park. I am aware that there are several different proposals in where and how to rebuild this power line that would take the line outside of Zion National Park and possibly place it within the UDOT right-of-way of SR-9.

From UDOT's standpoint we are not in favor of the new line being placed within the right-of-way at all. The existing line was built back in 1928 therefore has been in place longer than most people can remember. Therefore, it seems logical to me to rebuild the new line in the same location as the existing line. This would not take up anymore property than is currently being used and would not cause another government entity or private citizen to take on the burden of having the transmission line within their property. If the new power transmission line has to be relocated within UDOT right-of-way along SR-9, UDOT will require that it be located as close to the right-of-way line as is practicable as is spelled out in the "Manual for The Accommodation of Utilities and The Control and Protection of State Highway Rights of Way" and not under any portion of the pavement. Having the power line under the pavement is not an acceptable situation for UDOT. This would create an unreasonable burden on our maintenance forces to try and maintain the roadways as they should and not cause potential damage to the power line buried under the road. The roadway portion of the right-of-way should be used for vehicles and not for utilities if at all possible. To put it plainly, if UDOT is forced to have the power transmission line in the right-of-way, then the line will be built outside of the pavement area.

If the park service is concerned about the visibility of the power line and how many people will see it, as was indicated in our recent meeting then building it in the right-of-way is not the answer. By relocating the large power transmission line in the highway right-of-way will bring it in close proximity (as close as 30 feet) to SR-9 which is the main highway that brings visitors to Zion National Park, everyone will get a good look at it. Where it is currently located you hardly notice it unless you are really looking for it. Keeping the power line where it is currently located is the best solution for all. The power line will be less disruptive, less

visible and much less costly if rebuilt in its current location.

Thank you for this opportunity to express my opinion.

Sincerely,

Scott J. Snow
Encroachment/Permits Officer
Cedar City District

CC: Greg Brown - JBR Environmental
Orlando Jerez - UDOT, Utilities Coordinator
Scott Munson - UDOT, Cedar City District

APPENDIX C

VISUAL SIMULATIONS

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Photo of the existing line, east of Coalpits Wash, looking south.

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Printed: 25 March 2002

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Photo simulation of what the line may look like following installation. View from east of Coalpits Wash looking south.

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Printed: 25 March 2002

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h:\pccult25\new_photo.apr photo3p

Photo of the existing line from the Russell Home at the Grafton town site, looking northwest.

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Printed: 09 October 2001

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Photo simulation of what the site may look like following installation. Photo is from the Russell Home at the Grafton town site, looking northwest.

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Printed: 09 October 2001

eah

h:\pccult25\new_photo.apr photo7p

Photo of the existing line from Chinle Trail, looking south.

jbr environmental consultants, inc.
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Printed: 25 March 2002

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h:\pccult25\photos.apr photo4e

Photo simulation of what the line may look like following installation. View from Chinle Trail looking south.

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Printed: 25 March 2002

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h:\pccult25\photos.apr photo4p

Photo of the existing line from Chinle Trail, looking north.

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Printed: 25 March 2002

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Photo simulation of what the site may look like following installation. View from Chinle Trail looking north.

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Printed: 25 March 2002

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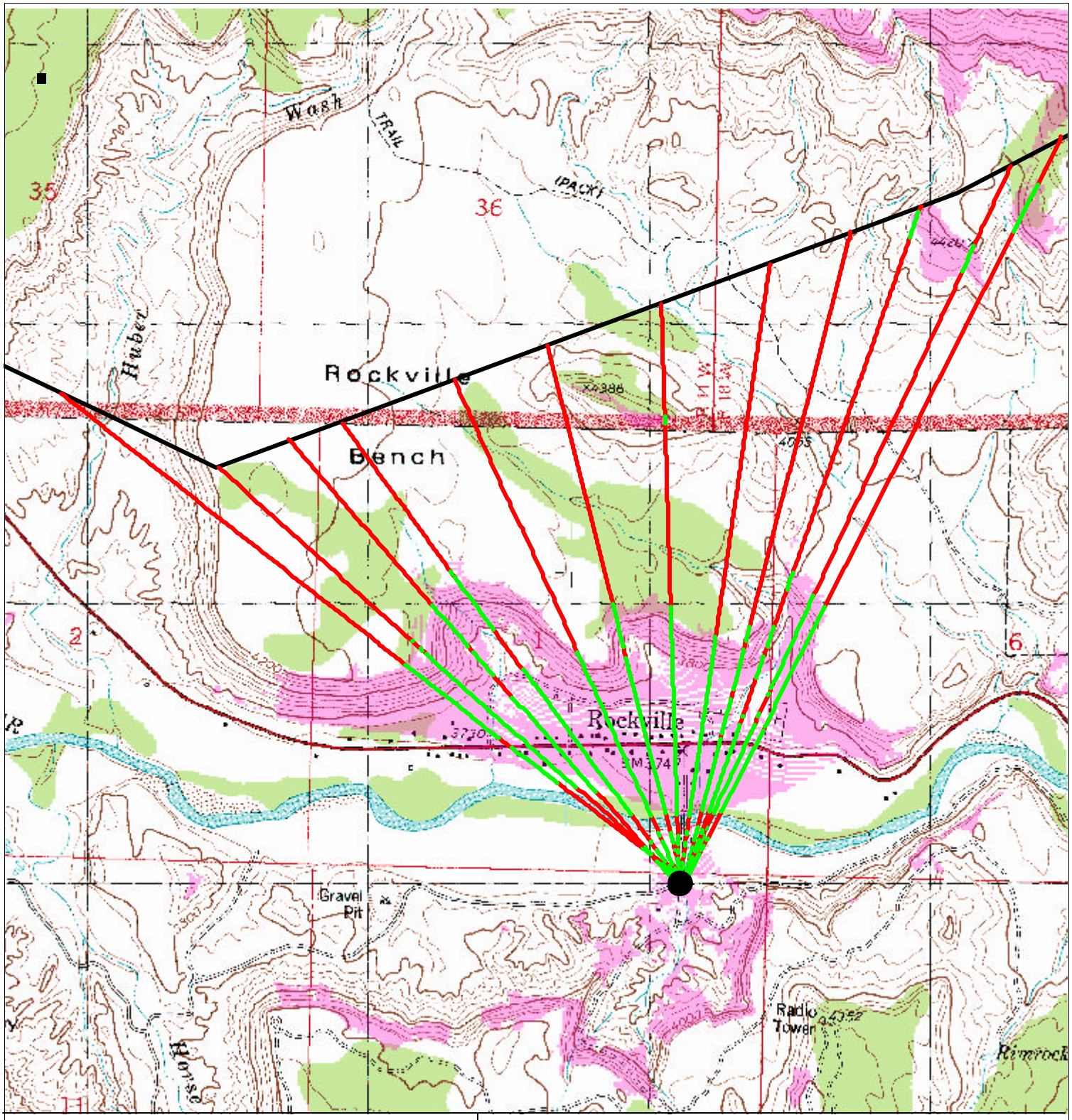

Base: Springdale West, UT - 1:24,000 USGS

Visible surface areas

View point

Power pole would be obstructed by topography if located in the red.

Power pole would not be obstructed by topography if located in the green.

0 0.25 0.5 Miles

Based on "Line of Site" Analysis, Performed Using ArcView 8.1

Visual Simulation of Proposed Action visibility while looking from the View Point located south of the town of Rockville using line of site and viewshed analysis.

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Created: 27 March 2002

Edited:

Printed: 27 March 2002

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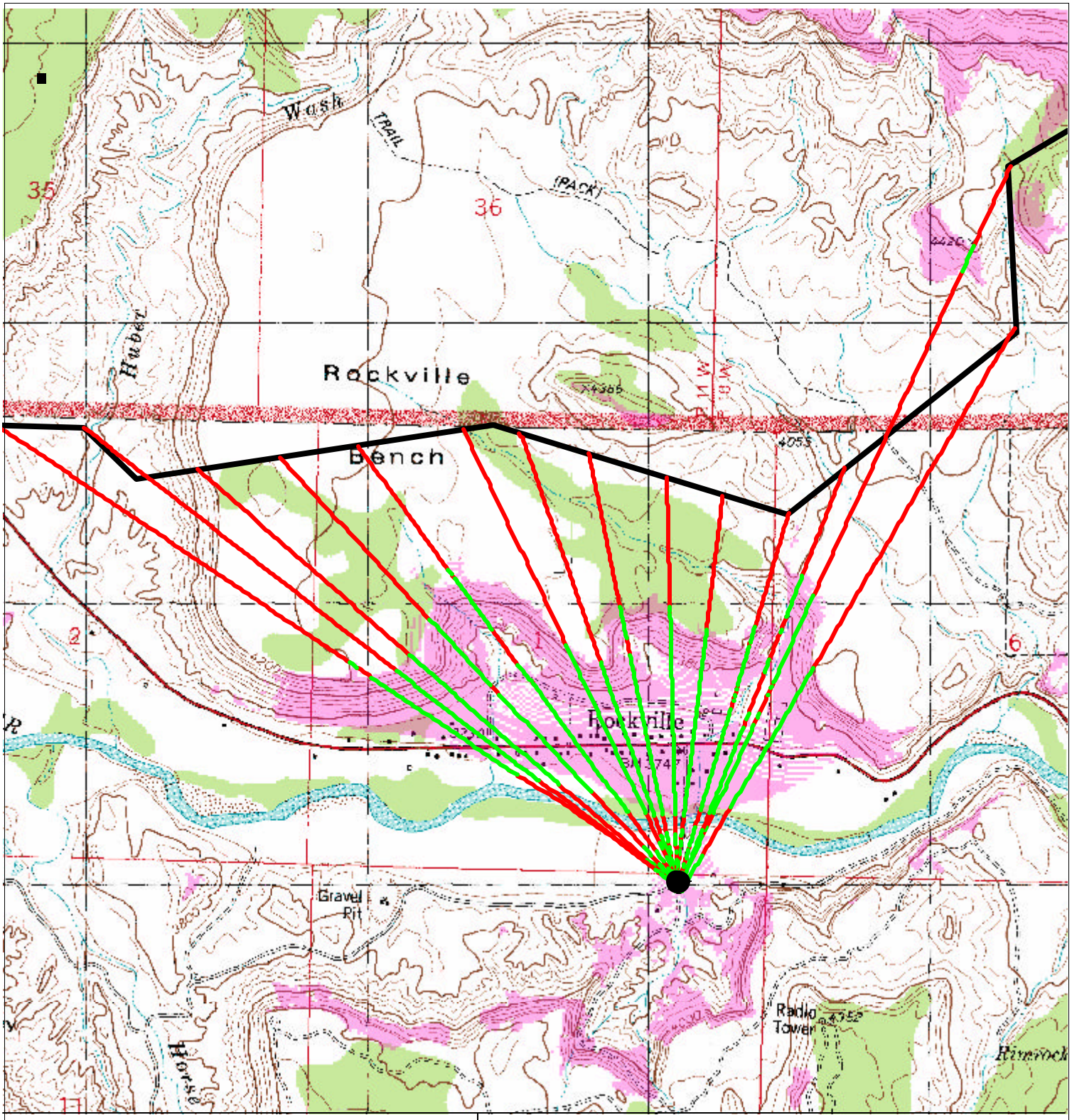

Base: Springdale West, UT - 1:24,000 USGS

Visible surface areas

View Point

Power pole would be obstructed by topography if located in the red.

Power pole would not be obstructed by topography if located in the green.

Based on "Line of Site" Analysis, Performed Using ArcView 8.1

Visual Simulation of Alternative A visibility while looking from the View Point located south of the town of Rockville using line of site and viewshed analysis.

jbr environmental consultants, inc.

Salt Lake City Cedar City Boise Reno Elko

Created: 27 March 2002

Edited:

Printed: 27 March 2002

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Photos of Alternative A, along State Route 9, at current condition (top photo) and what the site may look like following installation (bottom photo), looking northeast.

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Salt Lake City Cedar City Springville Reno Elko

Printed: 27 March 2002

eah

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Photos of Alternative A, along State Route 9, at current condition (top photo) and what the site may look like following installation (bottom photo), looking northeast.

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Printed: 27 March 2002

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Photos of Alternative A (view to the northwest) at the Anasazi Plateau subdivision, at current condition (top photo) and what the site may look like following installation (bottom photo).

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Printed: 08 February 2001

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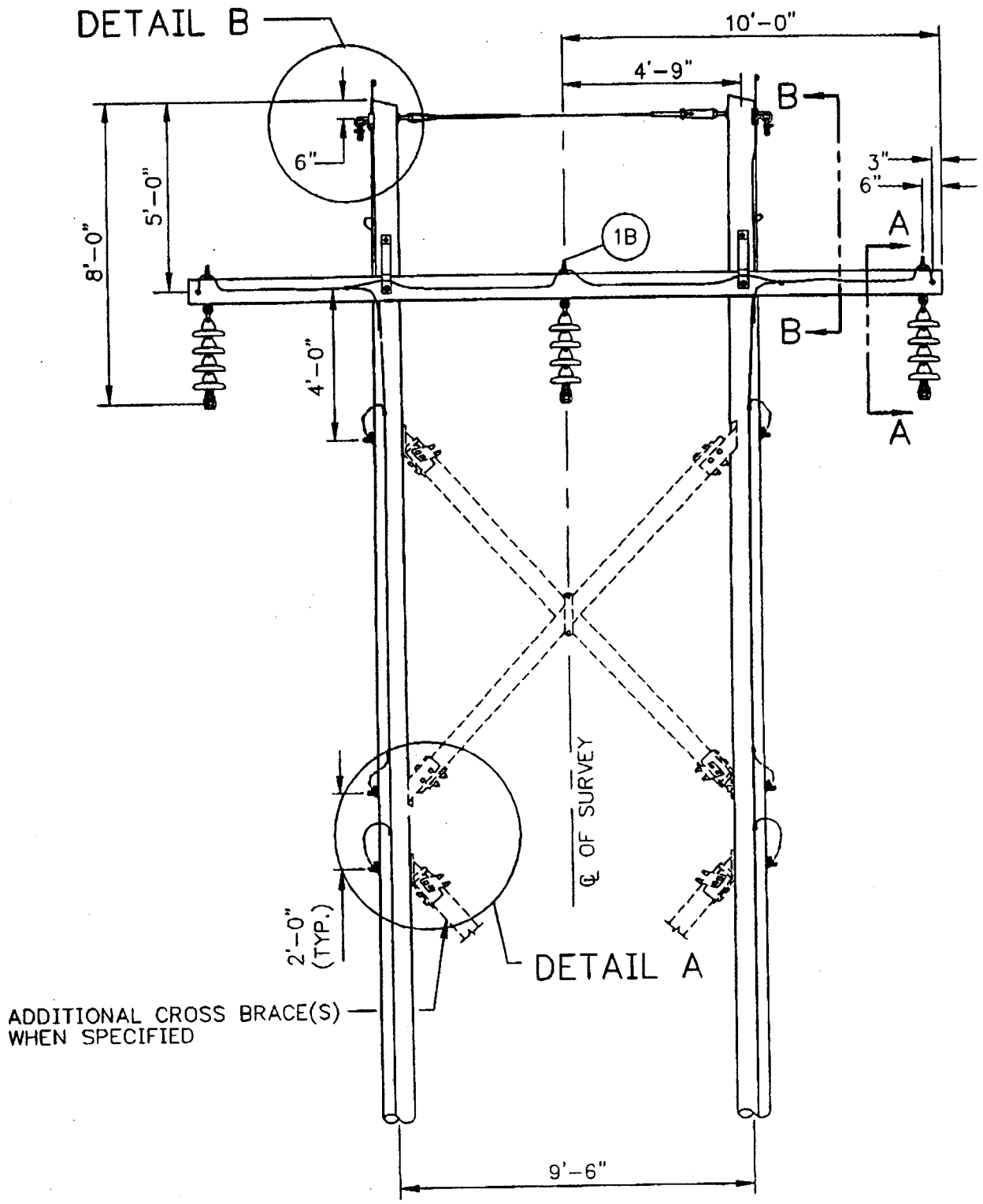
APPENDIX D

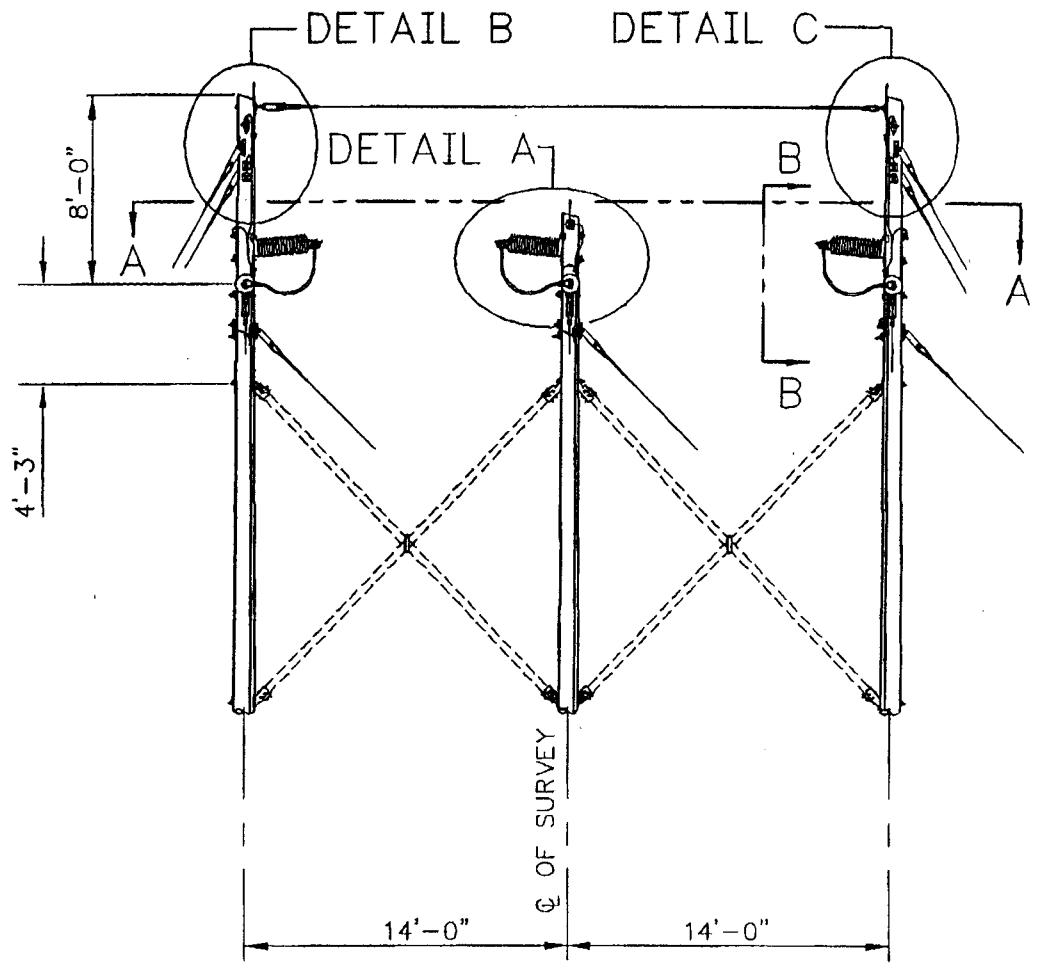
POLE STRUCTURE DIAGRAMS

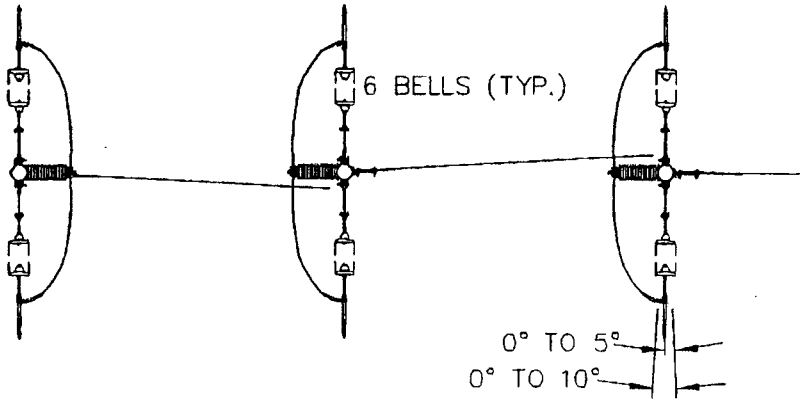
TE 400



PACIFICORP PACIFIC POWER UTAH POWER		46/69 kV Structure Shielded, H-Frame Tangent, with Wood Arm	Transmission Construction Standard
TE 400 Page 2 of 4	20 May 97		Stds Team Leader (C. L. Wright): CLW Standards Services (M. Brimhall): MMB

TE 450

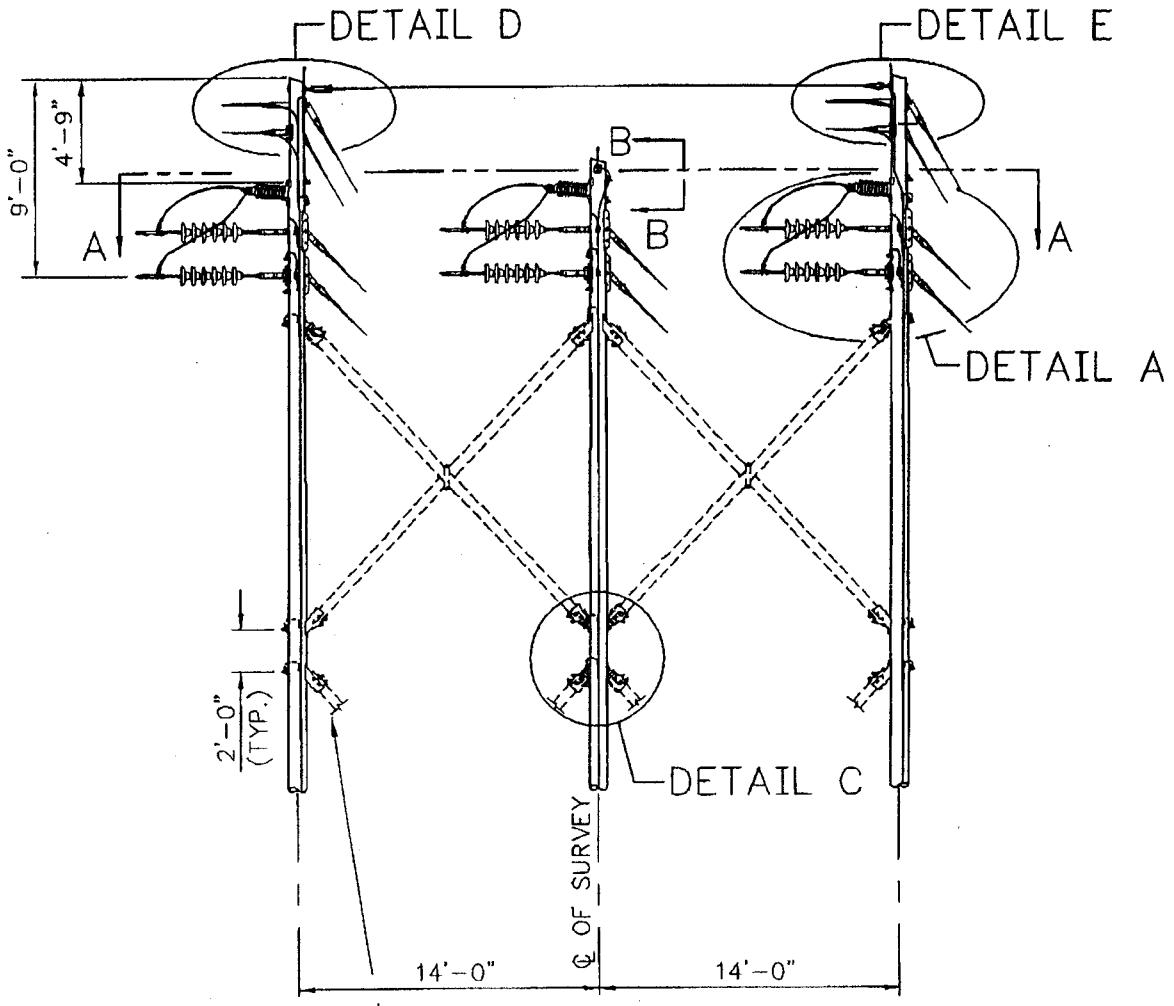


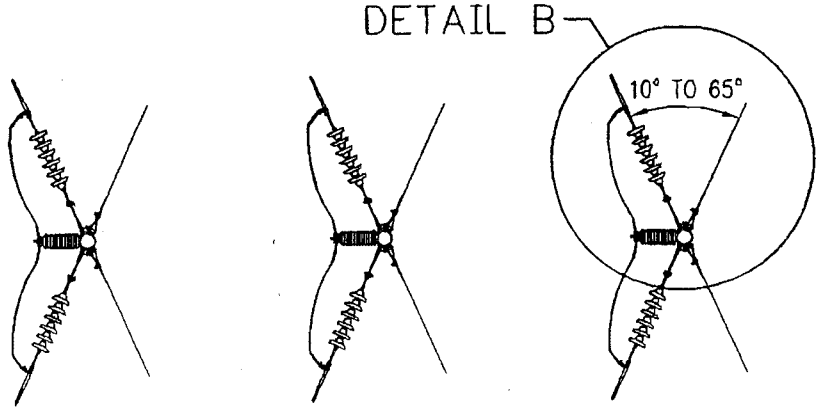


SECTION A–A

PACIFICORP PACIFIC POWER UTAH POWER		46/69 kV Structure Shielded, 3-Pole Dead-End, 0° to 10°	Transmission Construction Standard
TE 450 Page 2 of 4	20 May 97		Stds Team Leader (C. L. Wright): Standards Services (M. Brimhall):

TE 451





SECTION A–A

PACIFICORP
PACIFIC POWER UTAH POWER

TE 451
Page 2 of 4

20 May 97

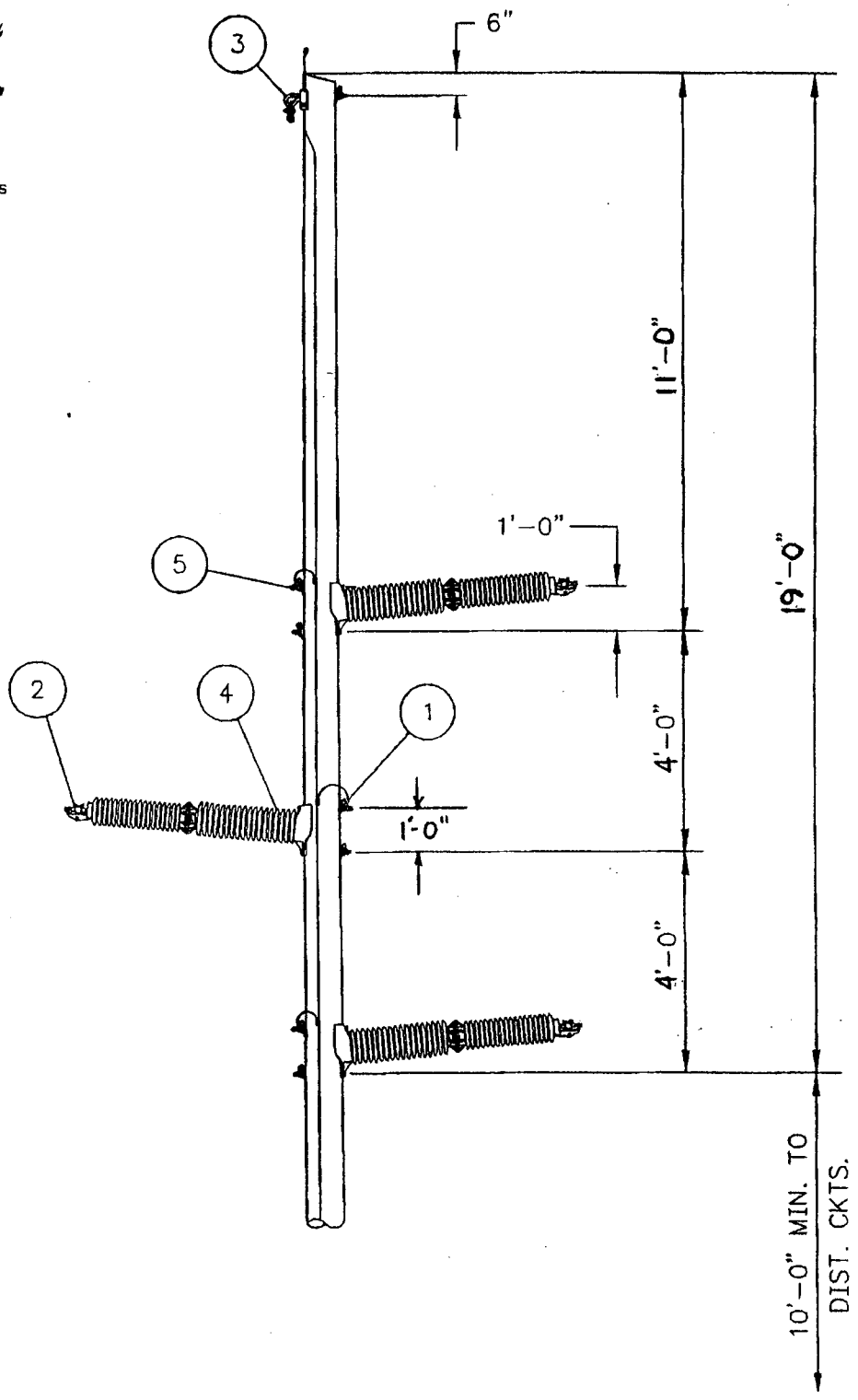
46/69 kV Structure Shielded, 3-Pole Dead-End, 10° to 65°

Transmission Construction Standard

Stds Team Leader (C. L. Wright):
Standards Services (M. Brimhall):

TG 201R

May be used
In raptor areas



Transmission Construction Standard	46/69 kV Structure Shielded, Single-Circuit Tangent, Post Insulators	PACIFICORP PACIFIC POWER UTAH POWER	
Stds Team Leader (C. L. Wright): CLW Standards Services (M. Brimhall):		14 Mar 97	TG 201 R Page 3 of 4